The RUBBER AGE

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Basic Changes in Restriction Held Up Pending Action by Colonies

British Colonial Office Reserves Right to Make Fundamental Revisions on February 1—Malayan Government Has Already Taken Two Important Steps in Tightening Up the Scheme— No Change in Exportable Percentage

INSTEAD of making fundamental changes in the Stevenson Rubber Restriction Scheme on November 1, as had been expected by many producers and manufacturers, the British Colonial Office announced late in October that the regulations which have been in force during the last year would be unchanged, but that the Colonial governments would be asked to study the scheme and make local changes to render the plan more efficient. The right was reserved by the Colonial Office, however, to make basic changes as of February 1, 1928, as long notice being given as found practicable. The formal announcement was made on October 31 that the exportable percentage in the current quarter would remain at 60 per cent.

It having been put up to them to work out a more efficient application of the present rules, the governments of Malaya and Ceylon gave immediate evidence of their willingness and intent to do so. As had been anticipated, over-assessment of standard production and the extended validity of export coupons were the first subjects to be given attention since these had been held chiefly responsible for the ineffectiveness of the Scheme during the last year.

First Move in Malaya

The first move in Malaya to carry out the wishes of the Colonial Secretary was reflected in the announcement of the Malayan assessment committee that after November 1 they would be guided by the following rules:

(1) The following scale shall be adopted in assessing standard production: On area planted in 1922, 180 lbs. per acre; 1921, 240 lbs.; 1920 and previously, 300 lbs.; provided that (a) no area planted in 1922 shall be assessed unless assessment committee or district officer is satisfied that not less than 60 per cent of the trees or, alternately, at least 75 trees per acre, measure not less than 22 inches in circumference 20 inches from the collar; (b) area burnt out or abandoned or otherwise unfit for tapping shall not be assessed; (c) if trees on holdings are deemed to be incapable of producing amount of rubber allowed under scale by means of system of tapping which complies with following standard, assessment committee or district officer may vary such scale.

(2) The standard of tapping which shall be the basis of assessment shall be a system which: (a) Does not exceed the equivalent of one cut on one-half of the circumference of the tree tapped on every third day; and (b) permits minimum of (1) six years for first renewal; (2) nine years for second renewal; (3) 12 years for subsequent renewal of bark.

L. C. M. Amery
British Colonial Secretary

The chief point of interest in these revised rules lies in the modified tapping arrangement. The standard tapping system recognized hitherto has been one cut on a quarter of the circumference of the tree daily or its equivalent. Under the new system there is to be one cut on one-half of the circumference of the tree every third day. This change is equal to a reduction of 16 2/3 per cent. In other words, a plantation's output on the new basis of tapping as compared with the old would be about one-sixth less and the committee would keep that fact in mind in judging the productive capacity of individual estates.

Some Areas Increasing Output

This reduction in assessments will, of course, be offset to some extent by the fact that all of the rubber trees which are bearing but not yet mature will move into higher production brackets this year and would accordingly mean a higher production assessment for the various estates. On account of such young rubber the standard production has been increasing year after year. During the last year standard production in Malaya, including Singapore and Penang Islands, amounted to 340,000 tons. On the old basis of tapping, this figure would probably have been shoved up to 380,000 tons after November 1 through the maturing of young rubber. The loss of one-sixth of this quantity through the change in the tapping

Lord Stevenson's Successor

Sir Matthew Nathan

system will mean a loss of 62,330 tons in the standard production, bringing it down to approximately 317,670 tons. This will mean a net reduction in the present standard production of only 22,330 tons, or not quite 2,000 tons per month. Without the young rubber coming into fuller production, the decrease caused by the change in tapping system would have been more than 5,000 tons per month.

The cutting off of 2,000 tons per month is not regarded lightly by those interested in the crude rubber market. It has been known that world rubber stocks are just comfortably large and that any sudden spurt in consumption would quickly send rubber prices to higher levels. A further decrease in Malayan output would have the effect of accelerating the nibbling into stocks which has recently been apparent.

To Shorten Life of Coupons

The second step of the Malayan restriction committee in making the Stevenson Scheme more effective was to submit to the Legislative Council of Malaya a bill to limit the life of export coupons. These coupons are issued quarterly to the various estates on the basis of the standard production which the committee has previously assigned them. Heretofore, the coupons were valid for several months or indefinitely so that if an estate did not produce enough rubber in one quarter to use up all of its coupons, then the coupons could be carried forward and used in a succeeding quarter. The new bill, which is believed to be certain of passage, would permit the carry-over of coupons to a succeeding quarter only when all of the coupons issued for the new quarter shall have been used. The wording of the bill is as follows:

"The quantity of rubber authorized by license to be exported during the quarter beginning after February 2, 1928, shall be exported in such quarter only, but any balance so authorized but not exported may be exported during the next quarter if and when the full quantity authorized for that quarter shall have been exported."

In commenting on this legislation, F. R. Henderson, president of the Rubber Exchange of New York, said that he believed the passage of the bill by the Singapore Legislative Council would eventually eliminate carry-over of the coupons. However, this will only begin, he explained, after the second or May-June-July quarter, since passage of the bill would prevent carry-over from one quarter to a third quarter. Thus, extra coupons from the quarter beginning February 1 could be used in the succeeding quarter which begins on May 1 "when and if the full quantity authorized for that quarter shall have been exported." If the total allotment for that quarter is not used, then coupons previously left over cannot be used; if the total allotment of coupons is used and the left-over coupons are also used, then there would be no coupons to be carried over to the following quarter. Carry-over for a period of more than six months would thus be eliminated after February 1.

One Way to Check Assessments

"The steps taken to eliminate the carry-over," Mr. Henderson said, "seem to be one method of checking up on assessments, because, if the allowance granted an estate as the basis on which it can produce 60 per cent proves too high, there can be no carry-over, and if the estate is unable to ship the full quota allowed under the present 60 per cent, it is evidence that the assessment is too high. In this case they are only permitted to ship the difference in the following quarter after the following quarter's quota has been exported. We assume from this that the permission is then canceled.

"This all means that there is apparently a definite determination to make restriction effective. If this is the case, while one may argue that the effect in actual shipments will not be felt for many months to come, the market will undoubtedly react to the belief that the statistical political position of rubber must necessarily improve before long."

Although no definite announcement has been made as to how smuggling of rubber from the restricted areas will be fought during the coming year, it is understood that Malaya will endeavor to cut down the tonnage which has been escaping restriction in that way. It has been estimated that rubber smuggled out of the territory may be running as high as 20,000 tons per year. One of the ways to "tighten up restriction" would obviously be to stop such a leak. Plans were made sometime ago to increase the fleet of launches used in fighting the smugglers and heavier penalties have also been imposed on captured smugglers.

The task that restriction now faces is apparent when it is realized how far the price has fallen below the pivotal price under the restriction scheme. During the quarter ended October 31 the average price of ribbed smoked sheets in London was 16.620 pence, whereas the demanded or pivotal price is 21 pence. These figures correspond roughly to 33.4 and 42 cents in American currency. The average rubber price in the last quarter was lower than in any quarter in the previous three years.

News of the Rubber Industry

A Special Section

Begins in This Issue on Page 143

RUBBER RESTRICTION REGULATIONS

The six fundamental rubber restriction regulations under which the scheme was operated during the last year and which will be continued without change at least until February 1, 1928, are as follows:

***First*—If the average price of rubber in London is under 21d, but not under 15d per pound during any quarter, the exportable percentage of standard productions for the ensuing quarter at the minimum rate of duty will be reduced by 10. If, however, the reduction thus effected is a reduction from the figure of 100 per cent, the reduced percentage for the ensuing quarter will be 80.**

***Second*—If the average price of any quarter is not under 21d, but less than 24d, there will be no change in the ensuing quarter. If, however, in each of the three consecutive quarters the average price is not under 21d, then the percentage for the ensuing quarter will be increased 10 per cent.**

***Third*—If the average price for any quarter is 24d or over, the percentage will be increased by 10 per cent for the ensuing quarter. If, however, the increase effectable under this regulation is an increase from 80 per cent, the increased percentage for the ensuing quarter will be 100.**

***Fourth*—If the average descends below 15d in any quarter the percentage in the ensuing quarter will be reduced to 60 per cent.**

***Fifth*—If the average exceeds 36d in any quarter the percentage in the ensuing quarter will be increased to 100.**

***Sixth*—In no case will the percentage be increased above 100 or decreased below 60.**

Labor is Seen as Principal Obstacle to FORD *in* BRAZIL

Rubber Industry Waits With Interest to See How the Famous Automobile Manufacturer Solves the Problem of Getting Enough Labor at the Right Price for Big Development in the Amazon

A TOPIC of interest in the conversations of rubber men everywhere in the last fortnight has been Henry Ford's entry into the ranks of the rubber growers and the chances which he has for success in his announced intention to develop a large tract of rubber land in the Amazon Valley. It is commonly recognized that in talking about a development of three or four million acres Mr. Ford is referring to a program which would occupy a great many years. The development of so large an acreage under the most favorable conditions would be an unparalleled feat; the development of even a good fraction of it in the Amazon will be enough to win the admiration of all men who understand rubber culture.

It may be said bluntly that except for Mr. Ford's reputation for doing things in a big way, as well as for knowing his ground pretty well before committing himself, the Ford project would not be taken very seriously. And even in the case of Mr. Ford, it is being asked just how he will overcome the obstacles of the Amazon.

The history of rubber in the Amazon has been a sad one, full of futile endeavors and disappointed hopes. Due to the high prices which wild rubber commanded for several years, early rubber pioneers in the region were much encouraged. The glory of the wild rubber business quickly faded, however, before the rising tide of Middle Eastern plantation rubber. Those who stuck to the Amazon tried to maintain their prosperity with wild rubber; before they realized it, the Middle East had supplanted Brazil as the world's rubber source.

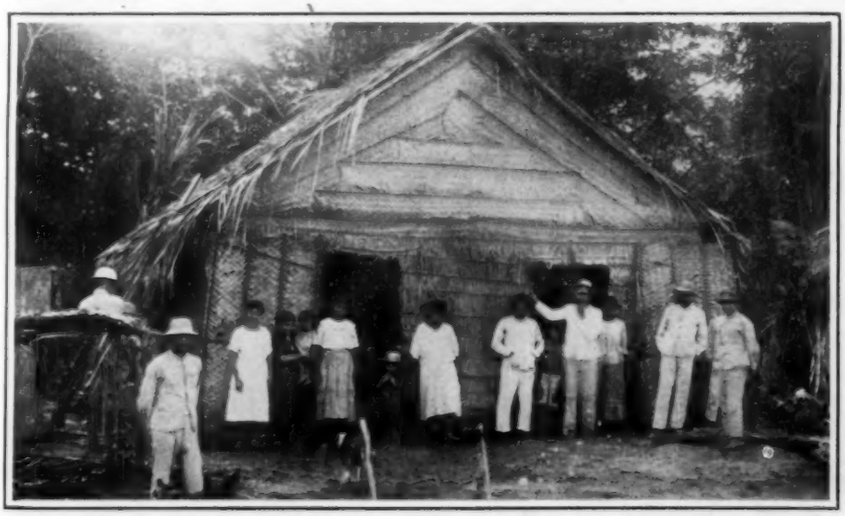
There were, of course, early attempts at planting rubber in the Amazon, usually in connection with the exploitation of wild rubber at the same time. Many of these efforts perished, as many in the Middle East did also, for lack of exact knowledge about rubber culture. Tropical diseases, the hard climate and poor choice of locations all contributed to stifling the efforts to break away from wild rubber and take up cultivated rubber.

But it must be remembered that these heroic efforts in the Amazon were made before science had surmounted some of the difficulties in tropical enterprises. Rubber culture has now been reduced to a science. Tropical diseases have been conquered through proper sanitation. When Mr. Ford enters on his task, therefore, of turning Brazilian jungles into rubber plantations, he will be equipped by modern science to overcome automatically many of the unfavorable elements which brought disappointment and failure to his predecessors.

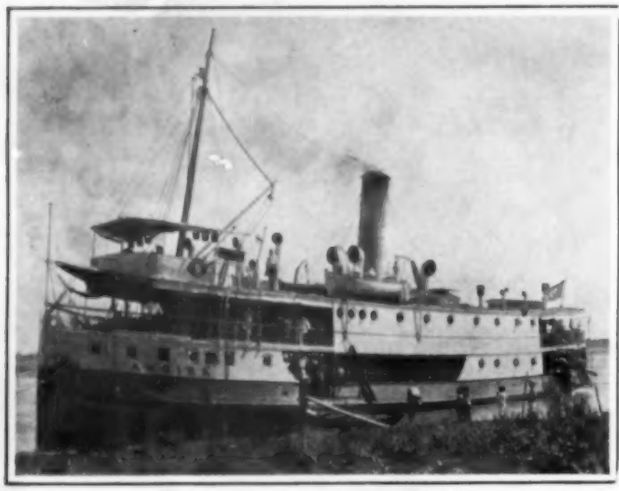
Edsel Ford

The chief trouble in connection with the early rubber plantations in the Amazon appears to have been in locating them to take full advantage of the satisfactory natural conditions. The investigators of the Departments of Commerce and Agriculture who visited the Amazon in 1923 and 1924 found that almost without exception, every remnant of an early plantation was in a location that could not be recommended in view of what has been learned about rubber culture. Unsuitable soil, close planting, lack of care and similar conditions had contributed heavily to the failures.

That errors similar to those just named may be avoided today is admitted. That satisfactory natural conditions may be found in the Amazon for rubber cultivation is known to everyone. With the aid of what has been learned about rubber culture, the Ford organization should have no trouble in locating exactly the tracts of land that will give their trees the best growth. The section in which their concession lies, that is,



Typical Home of Rubber Workers in the Amazon Valley



A common type of screw-propeller river steamer used on the Amazon and tributaries. Such craft are able to ascend the Tapajoz for long distances

on the Tapajoz river and extending toward the Xingu, was carefully studied by the government experts who reported it as most favorable for rubber planting. All the physical conditions as to soil, climate, drainage and topography were of the type necessary to good propagation. Climate and meteorological conditions were especially favorable. Success of the venture from the standpoint of the actual growing of high yielding rubber trees in the particular region is a foregone conclusion. Commercial success of the project is more likely to hinge on other conditions, the greatest of which is labor.

Ever since the question of growing rubber in Latin-America has been actively discussed, it has been regarded that labor, both the shortage of the supply and the high cost, would be the big drawback. How Mr. Ford has decided that this drawback can be overcome will be the most interesting aspect of his venture. With respect to the Amazon labor supply, the U. S. government investigators already referred to reported as follows:

"It is our conviction, based on careful observation and frequent inquiries, that a labor force of 30,000 for plantation purposes could be assembled without great difficulty in the Amazon Valley. The problem would naturally be easier of solution in some localities than in others, probably being easiest in the state of Para and becoming progressively difficult as the upper rivers were reached.

"The decline in the wild rubber industry has lessened the demand for laborers and so has created a potential source from which a very considerable number of men might be drawn for new plantation projects. Moreover, due to the superior living conditions under the plantation system, laborers could undoubtedly be drawn from rubber producing regions where work is slack. Others could be attracted from the Brazil-nut industry which is only a seasonal occupation and where conditions of employment leave much to be desired.

"If additional laborers were required for any undertaking in the Brazilian part of the Amazon basin, the northeastern states, the traditional recruiting ground of that region, could be resorted to. The population of the five states total 4,300,809."

It has frequently been regarded that any big project in the Amazon would have to solve its labor problem through colonization. If Mr. Ford has such an idea in mind, he has said nothing concerning it. Importation of large quantities of labor from the Far East, the only logical source, would be expensive and would entail many difficulties as well. The West Indies would not furnish enough labor for such a purpose.

In addition to the question of an adequate supply of labor, any Amazonian project will have to face the problem of a higher wage scale than is in effect in the Middle East where the bulk of the rubber is now produced. The daily wage for plantation workers in the East, including all items, runs to around 35 cents per day. The daily wage in the Amazon would be somewhat higher, varying according to the locality. In the upper Amazon, the government investigators found, a wage of around 60 cents per day was not unusual. In the lower Amazon 40 cents or even slightly less might be found sufficient. Once a project began to drain a district of its labor, however, the scale would quickly rise.

Unquestionably Mr. Ford, through his representatives on the ground, has made a careful study of the labor problem in the Amazon and has convinced himself that he can solve it. The 30,000 laborers who could be drawn from the Amazon, even if Ford got them all, would not be enough to make a real beginning on the development and maintainance of so large an area as the Ford concession. Even if as many more were drawn from the northeastern states, the like of which has never been done by anyone, the quantity would still be insufficient. Such wholesale drafting of labor would be as uneconomic as it would be difficult for so complete a demand for the available labor would inevitably mean paying more for all of it.

It is of course apparent that the development of a large area must be slowly undertaken and consequently the labor problem will be met only gradually. But even with the advantage of plenty of time, it is evident that the labor problem of the Amazon —which includes producing rubber at a price to compete with the Middle East—will be worthy of Mr. Ford's genius.

An Old Photo of Rubber Seedlings Growing in the Experimental Gardens Near the City of Para

No. 3 of A Series of Articles on

Purchasing Supplies for the Rubber Factory

Buying Machinery and Equipment

Close Co-operation is Required Between Purchasing Department and the Factory Engineers—Future Expansion and Possibility of Machinery Becoming Obsolete Must Be Kept in Mind at All Times.

PURCHASING machinery and equipment for the rubber factory is one of the most difficult problems confronting the purchasing agent since special conditions are present in every case, and perfect co-ordination between purchasing, engineering, and production departments is necessary for the best results. Equipment furnishes the physical means of carrying on operations and its usefulness is determined by the extent to which it makes possible the taking on of new business or helps to reduce costs in present operations.

Rubber manufacturers today are watching their machinery investments more closely than ever before, and each purchase is carefully studied to determine its relation to the general plan of future operations. Machines are being replaced today before they are worn out simply because they are out of date, and manufacturers cannot afford in these days of strenuous competition to overlook any aids to reduce costs and speed up production.

In this field, as in all purchases made by the organization, the purchasing agent should conduct all negotiations and be the final instrument in placing the contract. But in this instance, more than any other, he must recognize the vital and essential interests of the production and engineering departments. The production manager, who is held responsible for the efficiency of manufacturing operations, must have wide latitude in the selection of his equipment which so largely determines the costs of manufacturing. The plant engineer, who is to be responsible for the installation, care, and repair of the equipment, must also be sold on the type of machine selected and in most cases his advice will have a great deal to do with the decision.

Standardization Essential Requirement

In considering the primary equipment of every rubber factory, such as mills, crackers, calenders, spreaders, and tubers, physical plant lay-out is the first consideration. A mill already equipped with machines run from a line of shafting cannot change over to individual drives readily without great expense. Available space and ultimate lay-out are matters of more than passing moment. There are certain advantages in standardization. A rubber mill whose original equipment was of one particular make is more apt to add units of the same kind, making the interchanging of rolls, gears, and fittings possible throughout, and permitting the carrying of less spare rolls and parts. On the other hand, too strict an adherence to this policy closes the door to competition which is present in machinery buying just the same as it is in raw material purchasing and is a valuable adjunct to economy in buying. In large mills it is often considered advantageous to have units of several different makes doing the same work, thus affording opportunity for comparisons in operating costs, upkeep, and general satisfaction.

The temptation to buy second-hand machinery where possible is very great, especially in view of the tremendous reduction in the initial investment. It must be remembered that the selling costs on new machinery are necessarily high; expensive units are not being bought every day and the cost of distribution must be apportioned properly over each unit. Once a machine has been used, no matter how short a time, it joins the second hand class and the original distribution costs are written off—along with a generous slice of the real value, so that the temptation to pick up these units is very great. In the past few years, with so many small rubber and tire companies closing up and their plants being sold under the auctioneer's hammer at a small fraction of their original cost, the amount of second hand rubber machinery on the market has been very extensive.

Used Equipment Offers Good Buys

In buying a second hand machine, the purchaser must of necessity spend more of his time and money to satisfy himself as to the condition of the machine. But once he is sold on this point, and the unit fits his needs, he runs no undue risk in purchasing it. He does not get the service and terms that come with a new installation, but the lack of these may be more than made up by the reduction in price.

In passing from the field of primary machines to secondary units, different problems arise for the rubber manufacturer. These machines which we arbitrarily group to include cutting, rolling, cementing, and various preparatory equipment, are often designed in the buyer's own plant and built to specifications. For example, there are several standard makes of bias cutting machines on the market which will be found in almost every tire plant, but operated in conjunction with these are units of special construction which meet particular needs. Bids may be obtained for their construction, but they will of necessity cost more than standard units, even when built in the buyer's own shops. Often they are operated as auxiliaries to standard equipment such as tube building outfits teamed up with calenders, and continuous production tread units teaming up the Banbury mixer, warming mills, tubers, and tread cutters.

It is possible to obtain many types of machines on a lease or royalty basis, which may operate as a flat rental or royalty at so much per unit of production. This affords the manufacturer a constant or definite cost to work on and is a particular boon to the small manufacturer whose funds for machinery investment are limited. Large manufac-

turers usually prefer outright purchases although they are not unmindful of the benefits of leased machinery. When units are discontinued with leased machinery, there is no depreciation to take on the machines except for replacement of worn or broken parts. The large machinery manufacturer with mass production facilities can produce equipment more cheaply than can the operating plant's shop and should be able to save the manufacturer money on his machinery cost. He also enables the mill to keep up-to-date with the latest equipment at no cost to him. Service and repairs are usually furnished free of charge with leased machinery and enable the manufacturer to run a smaller mechanical personnel.

The third group of assembly and finishing machines such as tire builders, sole pressers, presses and vulcanizers of many types are usually bought on outright sale and in many cases are special installations. Once installed, they are not easily changed or replaced which means that their selection should be a matter for most careful planning by the production, engineering, and purchasing staffs.

Initial Cost is Not Main Consideration

Production auxiliaries such as motors, electrical equipment, air compressers, accumulators, and boilers often depend upon fuel and power facilities in the various localities and thus assume the role of special equipment.

In making the final decision of which machine to buy too much weight must not be placed on initial cost. A formula has been devised by prominent financial engineers by which comparison can be made between different machines under consideration and the total calculated investment or final cost determined. This takes into consideration the initial cost (actual); initial installation cost (actual); estimated service in life years; estimated cost of subsequent renewals; estimated cost of removing old machine and scrap value; repairs and maintenance, annual, during third and fifth years of life, and the annual power and operator costs.

This is the theoretical way of making the decision of which machine to buy. But it should be backed up by practical observation, and this is just what is being done in the rubber industry today. The first thing the plant engineer and production manager want to know is who among their competitors is using the machine, and arrange for a visit to see it in operation in order to get the other fellow's slant and experience with it. This is usually done independent of the vendor of the machine so that an unprejudiced view can be obtained. It is a tribute to the broadmindedness and co-operation in the rubber industry today that such plant visits are possible. After years of the closed door, the rubber men have found out that each can learn something from the other, and all are benefited.

Equipment May Be Obtained on Trial

It is generally possible to obtain medium sized machines on trial for a period. This is desirable when the machine in question is untried and of a new type, but the buyer must remember that he incurs some cost in this instance, such as freight, installation, and special parts, and in case he fails to accept the machine, these expenses are a dead loss. The trial method is being used in many cases to advantage, however.

Liberal credit terms on large machinery purchases are quite commonly offered in these days of cheap money, and enable the small manufacturer to finance his machinery purchases quite readily. It must be remembered, however, that the cost of such accommodations are in the purchase price, and that the business axiom, "One gets what he pays for," is true in machinery buying as in everything else.

The Next Article on Purchasing Will Be on
Rubber Chemicals and Compounding Materials

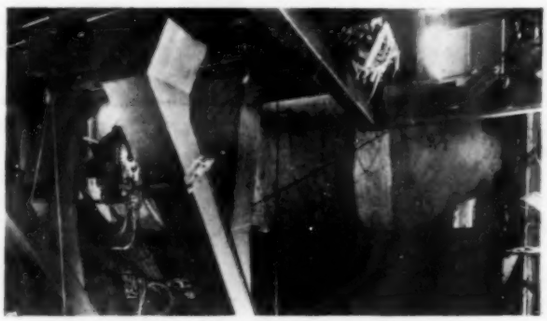
Schaphorst's CHATS *with the* ENGINEER

By W. F. Schaphorst, M.E.

ALTHOUGH it will probably be some time before boilers carrying 1,000 pounds pressure will be used in rubber plants, still, one can never tell. We are moving at a rapid pace these days. I therefore believe the following will be of interest to readers of The Rubber Age.

At Laurel, Mississippi, in the plant of the Mason Fiber Company is a steam boiler that furnishes steam for the manufacture of a sawmill waste product called Presswood. This boiler operates at the highest pressure so far employed for process purposes.

A pressure of 200 lbs. is first applied to waste wood chips and they are cooked thusly for only 10 to 15 seconds. The valve is then opened fully and the chips subjected to a pressure of 1,000 lbs. This pressure is maintained for the brief period of 3 to 5 seconds. Immediately after this the container is suddenly opened and the pressure released, the pressure dropping 1,000 pounds. This causes the chips to explode for reasons known to all engineers. A wood pulp of long fibers is thereby produced. After this the exploded chips are pressed into fiberboard.



The photograph herewith shows the boiler which is a 4,000 sq. ft. Babcock & Wilcox Cross-drum type. It has 2 in. tubes ⅜ in. thick.

The drum is of a solid steel forging. It has drum ends 4 ft. in diameter and 4 in. thick.

Adjustment of Bearings

AUTHORITIES admit that from 20% to 30% of the power exerted by engines, turbines and motors is absorbed by the bearings in the form of friction. While this may not be entirely eliminated, there is a possibility of doing so to a considerable extent. Each bearing, whether plain, roller, or ball bearing, absorbs a certain amount of power, and when this is multiplied by the number of bearings throughout the entire rubber plant, the total loss of power may be astounding.

All bearings should be so nicely and accurately adjusted that with the correct amount of good lubricating oil, friction will be scarcely discernable. Then when this saving or elimination of friction has been accomplished, multiply this difference by the number of bearings, and you will have a fair estimate of the total saving of wear and tear on the machinery.

With every bearing throughout a plant reduced to the very lowest percentage of wear, the percentage of depreciation to be charged off each year would be very materially reduced, and the saving effected by lengthening the life of the machinery is well worth considering.

The Presence of a Chicle-Like Substance in the Peel of Green Bananas

Previous Investigators Reported That the Milky Fluid Found in Green Bananas Was Rubber, Oil or Wax, But It is Now Believed to Be Closely Related to Chicle

By HARRY VON LOESECKE

Chemical Research Laboratory, United Fruit Co., Boston, Mass.

WHEN an incision is made in the peel of green bananas, a milky, sticky fluid will at once exude. This fluid, if collected in quantity, is at first white, but after standing a short time in contact with the atmosphere, turns a light brown with a tendency for segregation to take place, part of the solids concentrating on the surface to form a cream. The sticky latex is found in the pulp of green bananas as well as the peel, and to a lesser extent in the pulp and peel of ripe bananas.

This latex has been described in the literature at various times as rubber and oil or wax. Thus, Esch (1)* reported that he found India rubber in the green fruit of the Martinique banana from which he obtained a cloudy emulsion containing 10% rubber or 50% of the dry weight of the expressed juice. He stated that the green banana skins themselves contained as much as 20% rubber. Quantitative analysis of the dried skins of the Martinique banana gave, according to Esch, 77% rubber, 7% wax, resin and chlorophyl. Griebel, in his paper "Some Observations Concerning the Ripening Process of Bananas"; (2) also speaks of this milky juice as rubber. Jahkel, on the other hand, in his work on tannins in bananas, believed the droplets in the latex to be oil.

The results of the following work indicate, it is believed, that the latex obtained from the peel of green bananas is not rubber or oil, but is a body very closely resembling chicle. No attempt was made in this work to seek exact quantitative measurements of the amount of latex and chicle-like body in the banana peel, but rather to obtain a sufficient quantity of the latex and gum to examine their properties. With this purpose in view, the material was obtained in the following manner:

A quantity (9.8 kilos) of a variety of green bananas which we shall designate as "A" was cut into quarters and the latex squeezed from the peel by giving the fruit a wringing motion with the hand. All the latex seemed to come from the peel by this method, and none was apparent exuding from the pulp. The yield of latex amounted to 82 grams corresponding to 2% of the weight of the peel. From this quantity of latex was obtained 8.036 grams of crude, unwashed gum corresponding to nearly 10% of the weight of the latex or about 0.2% of the weight of the peel. After washing in cold, running water, and then drying for 15 hours at 33 C., the yield was 6.307 grams of gum corresponding to about 0.1% of the weight of the peel.

A further quantity (14.7 kilos) of another variety of green bananas, designated as "B" was treated in the same manner yielding 137 grams of latex corresponding to about 2% of the weight of the peel. The washed gum amounted to 10% of the weight of the latex or about 0.2% of the weight of the peel. If the fruit has been chilled the yield of latex is nil, the juice apparently congealing in the cells.

It will be noticed that the yield of gum and latex is very low due to the inefficiency of the method used. There is every reason to believe that a more efficient method could be found, but as already mentioned the idea of the work was merely to obtain a sufficient quantity of the latex and gum to examine their properties.

FIG. 1—Cross section of a banana showing latex ducts in the peel and pulp. In the peel the ducts run longitudinally and only the cut ends are visible, while in the pulp they are seen running transversely along the outside of the carpels. Mag. X 3.5

The fresh latex from the peel of green bananas is white, but after standing in contact with air for a very short time turns a light brown due to the tannins present. The latex is distinctly acid to litmus, practically odorless, but possessing a powerful astringent taste. Under the microscope the latex appears as a watery liquid in which are suspended spherical particles ranging in diameter from 3.5 μ to 31.5 μ (Fig. 2). On account of their size none of these globules exhibits Brownian movement. Occluded in some of the larger globules are crystals which further examination proved to be calcium oxalate. Under polarized light these crystals are more obvious. With ferric chloride the

*Numbers refer to bibliography at end of text.

latex gave a heavy bluish-black precipitate, and with aniline and hydrochloric acid an intense red color, thus establishing the presence of tannins and furfural repectively. The alpha-napthol test was positive, showing the presence of carbohydrates, but no blue coloration was obtained with iodine. The carbohydrates are therefore, no doubt, present

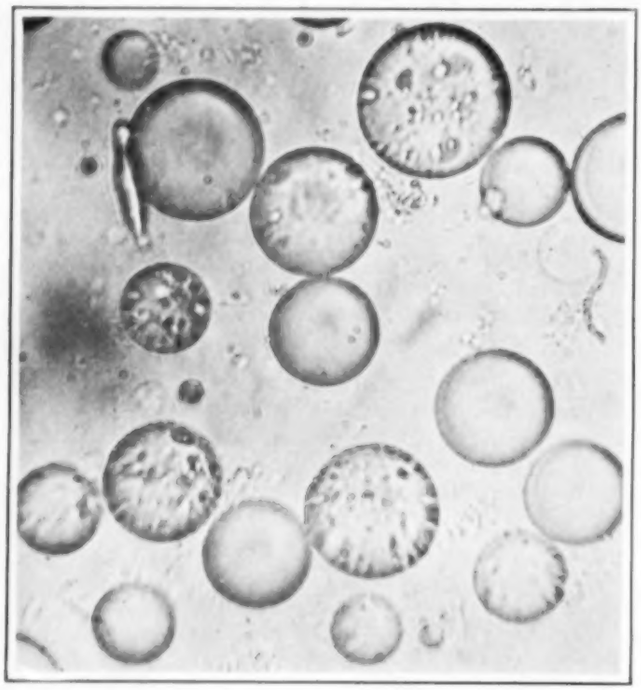


FIG. 2—Photomicrograph of the latex from the peel of green bananas. The refractive bodies are crystals of calcium oxalate. Mag. X450

as sugars and not as starch. When the latex was treated with sodium hydroxide a gel formed, which, upon subsequent heating, dissolved with the evolution of ammonia. Glucosides were not conclusively demonstrated. When extracted with amyl alcohol, and the alcohol subsequently removed by evaporation, the latex yielded a fatty residue with an odor of phenol. The addition of chloroform to the acidified latex gave a gummy residue upon evaporation of the solvent. This gummy residue was quite soluble in water yielding an intense red color.

The latex from both varieties gave the characteristic tests outlined above. Quantitative tests showed that the latex from "B" contained a higher percentage of solids than that obtained from "A." Analysis of the latices from these two varieties is given in Table I.

TABLE I. ANALYSIS OF THE LATEX FROM THE PEEL OF GREEN BANANAS

	Variety "A"	Variety "B"
Water	83.34	78.07
Organic matter (gum, tannins, sugars, etc.)	15.68	21.07
Total solids	16.66	21.93
Inorganic matter (ash)*	0.98	0.86
Sp. Gr. 17.5/17.5	1.042	1.040
Freezing point (uncorr.)	-1.0C.	-1.0C.

* Consisting chiefly of chlorides, phosphates, carbonates and sulphates of potassium, calcium and magnesium.

The gum was separated from the latex by centrifuging; the gum rising to the top where it was skimmed off, washed and dried. This method of collection was found to be the most satisfactory for the purpose in view after preliminary tests with various acids, alkalies and salts, with and without the addition of heat.

The chicle-like gum thus obtained was pure white immediately after washing, but after drying became a brown, tacky mass, odorless and tasteless. The gum starts to melt at 40 C. If the gum is not thoroughly dried, mold will develop after a few weeks. The analysis of the gum from variety "B" is given in Table II.

TABLE II. ANALYSIS OF THE CHICLE-LIKE GUM OBTAINED FROM THE PEEL OF GREEN BANANAS (Variety "B")

	Per Cent
Moisture	11.46
Acetone soluble resins	44.45
Ether extract (hydrocarbons)	34.36
Albans	13.61
Fluavil	15.35
Total nitrogen	0.38
Protein (N x 6.25)	2.38
Mineral matter (ash)	0.39

The resins from the acetone extract formed globular particles in the solvent when cooled. According to Dannerth (3) this is characteristic of acetone soluble resins from chicle. Alban and fluavil are two resins common to chicle. The former is described by Allen (4) as a mixture of white resins, soluble in hot alcohol, and the latter as a yellow, amorphous resin, which softens at about 50 C. and boils at 105 C. It dissolves in cold alcohol, in which the alban resins are practically insoluble.

Attempts to vulcanize the gum met with failure. A mixture of gum with 15% sulphur and 1% litharge was vulcanized at 20 lbs. pressure for 90 mins. At the end of this period the mixture was still extremely tacky. Nor would the mixture vulcanize when subjected to dry heat at 100 C. even after 15 hours at this temperature.

SUMMARY

An analysis of the latex and the gum obtained from the peel of green bananas is given. The data obtained seems to indicate that the gum is more closely related to chicle than to India rubber as hitherto believed.

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Disagrees With Speaker's Statement on Antimony Poisoning

To the Editor of THE RUBBER AGE:

In your issue of October 25 you print a paper entitled "Rubber Compounding Ingredients and Their Health Hazards" which was read by Dr. J. Newton Shirley at a recent Safety Congress at Chicago.

We must take issue with Dr. Shirley on several statements he makes regarding antimony. Over a period of twelve years we have manufactured about fifteen million pounds of precipitated antimony sulphide. In our works we employ on this work from twenty-five to fifty workmen. During this time we have also been in more or less contact with six other producers of antimony sulphide and about one hundred different rubber factories using the product. *In all our experience we have never seen or heard of a single case of antimony poisoning.*

Dr. Shirley states his belief that the "use of antimony is much less than formerly because of the fear of poisoning and the production of dyes which are less toxic and which will give satisfactory results in much smaller quantities." This belief is incorrect. Antimony sulphide is used in about eighty different factories in this country today. Some dyes are being used to imitate the color of antimony, but in most compounds these dyes offer little, if any, color cost advantage over the best grades of antimony and practically no reinforcing or aging value.

We believe Dr. Shirley's paper, insofar as it refers to antimony, is misleading and detrimental to the industry producing this valuable compounding ingredient.

Very truly yours,

D. A. SHIRK.

Rare Metal Products Co.,
Belleville, N. J.
Oct. 27, 1927.

Final Report Issued on Survey of Tire Dealers' Stocks

Dealers Found to Have More Tires on Hand This Year Than Last—Survey is Based on Returns From 33,548 Answers to Department of Commerce Questionnaire—Figures by States

THREE facts of considerable interest to the tire industry appear in the final report of the Commerce Department's survey of tire dealers' stocks as of October 1. First, stocks of both tires and tubes are somewhat higher than they were on the first day of October in 1926; secondly, the number of dealers stocking less than 25 tires appears to be dwindling; and lastly, the movement among dealers to concentrate on selling one make of tire has continued to grow until almost one-half of all the dealers replying to the Department's questionnaire are so conducting their business.

In a preliminary report issued by the Rubber Division of the Department of Commerce on October 13 it was indicated that the average dealer was holding 55.9 tires and 100.7 inner tubes. As is usual, both of these figures were raised in the final report which showed the average dealer to have 57.6 casings and 103.1 inner tubes. The final report for the same date last year showed the average tire and tube stock to stand at 49.9 and 93.8 respectively.

The increase in the figures this year no doubt indicates that dealers are more adequately stocked than they were last year but the increases must be discounted by the fact that fewer small stocks were included in computing the average this year. The Rubber Division sends out about 100,000 questionnaires. Last year 37,439 dealers having tires on hand filled out the forms; this year 33,548 did so. Among this year's replies, however, were a smaller proportion showing small stocks. This can either be taken to mean that the small dealers are dropping out or that they have so added to their stocks as to raise them into a higher class. If the former is assumed, the increase in the average stock may be somewhat misleading when compared to the averages for previous years.

Like the casing stocks, inner tube stocks appear to be higher this fall than at any time since the surveys have been taken. The average dealer held 103.1 tubes as compared with 93.8 one year ago and 99.1 two years ago.

Most of the tires now held by the dealers are of the balloon type, the change-over being quite noticeable year after year. Out of the average stock of 57.6 casings held this fall, 30.7, or more than half, were balloons. Last year out of an average of 49.9 casings, only 19.8 were balloons. On October 1, 1925, the average stock was reported as 56.6 casings of which no more than 17.5

DEALERS' STOCKS OF AUTOMOBILE TIRES

	October 1, 1927		October 1, 1926		October 1, 1925	
	No. of Dealers Reporting	Average per Dealer	No. of Dealers Reporting	Average per Dealer	No. of Dealers Reporting	Average per Dealer
Total casings	33,548	57.6	37,439	49.9	35,331	56.6
Balloon casings	23,699	30.7	24,454	19.8	16,240	17.5
Inner tubes	32,984	103.1	36,947	93.8	35,163	99.1
Solid & Cushion	1,671	26.1	1,992	23.9	2,122	25.0

DEALERS' STOCKS OF AUTOMOBILE TIRES BY STATES, OCTOBER 1, 1927

	Total Tires			Balloon Tires			Inner Tubes		
	No. of Dealers Reporting	No. of Tires on Hand	Average No. per Dealers	No. of Dealers Reporting	No. of Tires on Hand	Average No. per Dealer	No. of Dealers Reporting	No. of Tubes on Hand	Average No. per Dealer
Alabama	355	20,656	58.2	242	7,395	102.1	346	35,325	102.1
Arizona	171	9,261	54.2	128	4,087	96.7	169	16,345	96.7
Arkansas	417	26,415	63.3	258	9,328	128.4	412	52,890	128.4
California	1,882	129,458	68.8	1,355	46,893	115.9	1,850	214,404	115.9
Colorado	441	22,015	49.9	322	7,779	83.1	441	36,636	83.1
Connecticut	354	23,989	67.8	240	11,756	113.4	345	39,138	113.4
Delaware	54	5,266	97.5	31	1,810	182.3	55	10,024	182.3
District Columbia	42	3,096	73.7	40	1,493	135.2	39	5,273	135.2
Florida	418	49,214	117.7	325	22,494	171.0	411	70,273	171.0
Georgia	366	19,920	54.4	239	7,462	112.8	363	40,936	112.8
Idaho	201	8,290	41.2	153	3,559	78.5	195	15,310	78.5
Illinois	1,752	96,606	55.1	1,262	35,096	102.0	1,715	174,909	102.0
Indiana	1,170	57,164	48.9	802	21,785	86.0	1,150	98,913	86.0
Iowa	1,264	66,599	52.7	966	21,639	100.5	1,242	124,775	100.5
Kansas	962	55,694	57.9	728	21,233	98.7	958	94,598	98.7
Kentucky	434	26,562	61.2	294	8,575	176.5	424	74,827	176.5
Louisiana	308	19,912	64.6	202	6,729	131.1	305	39,998	131.1
Maine	423	16,263	38.4	287	6,439	72.0	425	30,599	72.0
Maryland	405	26,598	65.7	343	13,052	109.1	401	43,749	109.1
Massachusetts	880	63,844	72.6	673	26,976	115.1	875	100,703	115.1
Michigan	1,425	76,867	53.9	1,040	29,830	100.4	1,375	138,008	100.4
Minnesota	1,096	64,466	58.8	770	21,777	99.6	1,079	107,466	99.6
Mississippi	339	19,529	57.6	223	6,226	117.6	333	39,173	117.6
Missouri	1,204	62,308	51.8	786	22,163	104.2	1,195	124,476	104.2
Montana	287	15,348	53.5	233	7,053	87.8	283	24,853	87.8
Nebraska	632	36,813	58.2	479	22,163	104.2	1,195	124,476	104.2
Nevada	58	3,144	54.2	45	1,471	57	4,768	83.6	
New Hampshire	184	6,220	33.8	135	4,261	186	11,124	59.8	
New Jersey	657	38,949	59.3	503	16,669	645	71,047	110.2	
New Mexico	192	8,559	44.6	134	3,413	188	13,984	74.4	
New York	1,992	131,805	66.2	1,364	51,472	1,946	222,395	114.3	
North Carolina	532	34,573	65.0	340	10,814	521	57,390	110.2	
North Dakota	475	19,855	41.8	318	5,619	465	44,468	95.6	
Ohio	1,958	122,895	62.8	1,380	45,398	1,912	208,682	109.1	
Oklahoma	608	44,482	73.2	455	19,352	612	87,558	143.1	
Oregon	439	31,856	72.6	338	10,477	420	40,516	96.5	
Pennsylvania	2,778	137,435	49.5	1,956	55,199	2,724	246,243	90.4	
Rhode Island	118	6,451	54.7	77	1,633	116	12,910	111.3	
South Carolina	252	12,462	49.5	137	3,388	251	24,507	97.6	
South Dakota	382	16,675	43.7	284	5,250	378	29,206	77.3	
Tennessee	364	25,694	70.6	230	9,613	362	50,857	140.5	
Texas	1,413	90,824	64.3	971	32,906	1,413	167,759	118.7	
Utah	164	8,256	50.3	125	3,600	163	13,064	80.1	
Vermont	220	8,328	37.9	146	3,007	218	12,434	57.0	
Virginia	791	29,653	37.5	431	9,391	773	49,439	64.0	
Washington	624	26,839	43.0	445	9,951	610	41,708	68.4	
West Virginia	468	20,347	43.5	301	7,211	460	33,224	72.2	
Wisconsin	1,085	57,866	53.3	816	20,246	1,076	94,570	87.0	
Wyoming	140	5,570	39.8	105	2,360	135	10,690	79.2	
Unallocated	372	22,976	61.8	242	8,854	355	35,021	98.7	
Total	33,548	1,933,867	57.6	23,699	726,627	32,984	3,399,726	103.1	

were balloons. Solid and cushion tires show little change, either in the number of dealers handling them or the average number in stock. Whereas 33,548 dealers had pneumatic tires on hand, only 1,671 dealers were offering solid or cushion tires. This proportion has held about the same in other years. The average stock of these non-pneumatic tires is 26 as compared with 23.9 one year ago.

The largest of the accompanying tables shows the average tires per dealer in the different states. The sections of the country where stocks are high are readily seen. Florida has the highest stocks of all the states. Delaware and Oklahoma are other states where the average is high. New England and the northwest have low averages, reflecting the depletion of stocks for the slower winter motoring season.

While the primary object of the tire dealer surveys which were instituted in 1924 has been to show the comparative number of tires held by dealers in the spring and fall, other interesting information has also been developed with each questionnaire. One question has related to the number of makes of tires which the dealer is handling. The responses to this question have been carefully tabulated year and year and seem to show an unmistakable trend toward a concentration of sales efforts on fewer makes. Before the war it was common for a dealer to limit the number of makes of tires he handled but in the post-war competition most dealers took on a second or third, and sometimes a fourth or fifth line. Now more dealers are again giving all their attention to one make. One of the accompanying tables shows how this concentration of sales effort has grown. Whereas in 1925 only 41.6 per cent of the dealers said they handled only one make, 48.6 per cent of the dealers are now able

NUMBER OF MAKES OF TIRES HANDLED

One	16,016	48.59	16,652	44.82	14,392	41.64
Two	11,706	35.51	13,702	36.88	12,626	36.53
Three	3,703	11.23	4,714	12.69	5,218	15.10
Four	1,081	3.28	1,545	4.16	1,609	4.65
Five	321	.97	356	.96	524	1.51
Six	138	.42	182	.49	196	.57
Total	32,965	100.00	37,151	100.00	34,565	100.00

to make that statement. At the present time there are 84 per cent of the dealers handling no more than two makes as compared to 78 per cent two years ago.

Questions have also been asked to indicate the character of the tire dealer's business, what other products he sells, what service he renders and so on. The surveys have indicated a gradual moving of tire retailing over to coincide with automobile retailing. The latest survey shows that of all the dealers answering the questionnaires, 40 per cent sell automobiles. Service for the motorist follows tire retailing closely. For instance, 77.5 of the dealers said they sold gasoline, 56 per cent sell batteries and 70 per cent operate air compressers. Most of the tire dealers offer tire service also; 69 per cent sell tire repair materials, 64 per cent repair inner tubes, but only 13 per cent have vulcanizing equipment.

"Bentonite"—A Colloidal Clay

What is claimed to be a clay of superior qualities for use as a rubber filler was recently announced by the Acme Oil Corporation, 189 N. Clark street, Chicago, Ill. This clay called "Bentonite" is of a colloidal nature, absorbing twenty times its weight of water. This property gives it a marked adhesive and bonding value. It is said to be particularly valuable in connection with latex on account of its emulsifying qualities. "Bentonite" readily combines with some alkalies and acids, forming double salts without any apparent change in structure. It is quoted at $28.50 per ton.

The Acme Oil Corporation in addition has developed a line of rubber softeners having anti-oxidant qualities. Samples of these will be sent upon request.

Germany Regains Trade in Sundries

RECENT trade figures indicate that Germany is about to regain and perhaps surpass the extensive trade in rubber sundries and specialities which she enjoyed before the war. As is well remembered, Germany was then shipping sundries in substantial quantities all over the world, frequently to the despair of American houses which attempted to compete with her. Now it appears that Germany is again to occupy a very important place in such trade.

In 1913, Germany shipped 5,696 metric tons of rubber specialities and sundries, valued at $9,170,200. In 1926 her exports totaled 5,305 metric tons, valued at $9,028,300. If her trade for the remainder of the current year continues in the same proportion as during the first six months of 1927, she will have exceeded by a good margin the 1913 figures. For the first six months of the current year German exports of such goods have totaled 3,105 metric tons, valued at $4,810,200.

In analyzing the exports by individual countries, it is to be noted that Germany has not fully recovered her pre-war trade in the United Kingdom, Switzerland, and some of the Latin-American countries. Her trade in British India, Scandinavia and the Netherlands has materially increased, however.

Properties of Rubber and Sulphur Compounds

The results of tests conducted to ascertain certain properties of compounds of rubber and sulphur were recently disclosed in a paper entitled "Density and Electrical Properties of the System, Rubber-Sulphur," prepared by H. L. Curtis, A. T. McPherson and A. H. Scott, of the Bureau of Standards, Washington, D. C. The results were published in Scientific Paper, No. 560, of the Bureau of Standards. The complete abstract follows:

Density and electrical properties of compounds of rubber and sulphur were measured for the range of composition from 0 to 32 per cent of sulphur, or from crude rubber to hard rubber. Important changes in the properties with the proportion of sulphur were noted. These changes show definite regularities and occur at compositions which may be represented by simple empirical formulas; they are, accordingly, taken as indicating the existence of definite compounds of rubber and sulphur.

At the composition 19 per cent of sulphur, which corresponds to $(C_5H_8)_2S$, all the properties which have been studied undergo significant changes. At this composition the curve relating density to percentage of sulphur shows a change in slope, and the curve relating thermal expansivity to percentage of sulphur, a distinct inflection. Both the dialectric constant and the power factor curves pass through minima at 19 per cent of sulphur, while the resistivity curve takes a decided upward trend.

The composition 10.5 per cent of sulphur, which corresponds to the formula $(C_5H_8)_4S$, is marked by a maximum value of the dialectric constant. The power factor shows a maximum at 13.5 per cent, which may represent $(C_5H_8)_8S$, or else an equimolecular mixture of $(C_5H_8)_2S$ and $(C_5H_8)_4S$. The maximum of the resistivity occurs at about 26 per cent of sulphur, which corresponds to $(C_5H_8)_4S_3$. Other properties show changes of a less marked nature at these compositions.

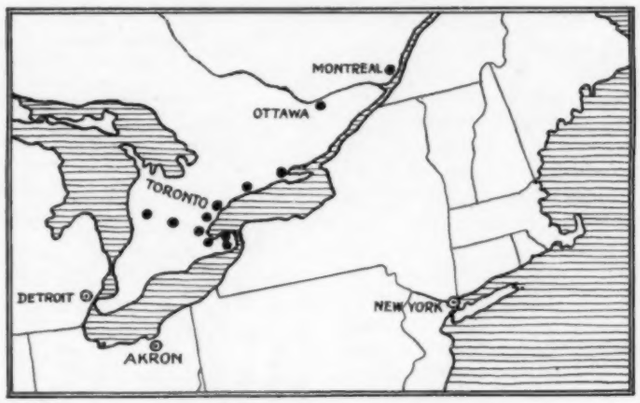
No extensive study was made of the effect of free sulphur on the electrical properties of rubber, but data were obtained which indicate that it is small relative to the effect of combined sulphur.

Dialetcric strength measurements are not reported because the values seem to depend more on the conditions of test than on the properties of the compounds.

The Rubber Industry of Canada

After Enjoying a Ten Per Cent Growth in 1926, Canada's Rubber Factories Are Flourishing in the Present Year— Industry is Concentrated Geographically as in the U. S.

THE rubber industry of Canada, which is almost is closely allied with the rubber industry of the United States as the Canadian automobile factories are with Detroit, enjoyed a 10 per cent growth in 1926 and is now in a flourishing condition. The satisfactory progress last year is shown by figures which have recently been released by the Dominion Bureau of Statistics. This data corresponds to that produced by the industrial census of the United States, now taken every two years.



The Rubber District of Canada

The dots on the above map indicate Canadian cities in which one or more rubber factories are located. Montreal and Toronto each have several plants. Toronto is the center of a rubber district in Ontario much as Akron is in Ohio

The Canadian production of rubber goods for 1926, these new figures show, was valued at $86,508,137, an increase of $8,278,563, or more than 10 per cent over 1925. Tire production increased over the previous year in value by 11 per cent, and miscellaneous rubber goods by 34 per cent, while rubber footwear decreased slightly more than one per cent.

In common with the rubber industry in other countries, the chief product of the rubber industry of Canada is tires and tubes. The output of such goods in 1926 was responsible for 54.2 per cent of the total, being valued at $46,891,640. Rubber footwear produced was valued at $24,541,324, equal to 28.4 per cent of the total. All other rubber goods were valued at $15,075,173, representing 17.4 per cent.

A point of similarity between the American and Canadian rubber industries is their concentration geographically. Just as more than half of the rubber goods of the United States are produced in Ohio, so are most of the Canadian goods turned out in Ontario. During 1926 there were 39 establishments engaged in the production of rubber goods throughout the Dominion: 28 of them were located in the province of Ontario, 10 in Quebec and 1 in British Columbia. Not only is the industry almost entirely concentrated in Ontario and Quebec but the factories are in particular districts of those states as shown by the accompanying map.

The figures of the Dominion Bureau of Statistics do not indicate the source of the investments in Canadian rubber plants and it is impossible to say to what exact extent they are owned by American companies. However, it has been claimed in a recent study of the industry that of the 23 principal rubber and allied factories in Canada, nineteen are either completely owned by American companies or are controlled and operated by American capital.

The amount of capital invested in the Canadian rubber industry at the end of 1926 is placed at $62,661,702. Of this amount, fixed capital totaled $36,930,750, materials and supplies on hand $15,561,958 and cash, trading and operating accounts $10,168,994.

The number of persons employed in the industry during 1926 was 13,587, of whom 1,786 were salaried employees and 11,801 were wage earners. The amount of salaries and wages paid was $14,708,023, of which $3,096,334 was for salaries and $11,611,689 for wages. The average working day in all industries of the rubber trade for the year 1926 was 9.15 hours.

The total cost of all materials consumed in the industry in 1926 was $44,902,189, representing an increase of 30 per cent over the previous year. Crude rubber, the principal constituent, was valued at $29,407,857, being almost 60 per cent of the total cost of all materials consumed, as compared with 50 per cent for 1925. The second largest item was tire duck, with a total cost of $6,599,709, or over 13 per cent of the total, against $6,812,926 for 1925. The consumption of reclaimed rubber amounted to 16,370,089 pounds, valued at $1,622,572, or an average cost of $0.099 per pound as compared with a total of 12,129,556 pounds, valued at $1,121,148 in 1925, or an average cost of $0.092 per pound. In 1926, 19,209 long tons of crude rubber was consumed, and 7,308 long tons of reclaimed rubber, or 38 per cent as much of reclaimed as of crude. In 1925, the ratio was 28.5 per cent, consumption of crude rubber being 19,030 long tons, and of reclaimed rubber, 5,415 long tons.

Products of the Canadian rubber industry in 1926 included 2,966,088 automobile casings, 3,511,897 inner tubes, and 18,061 solid tires. Bicycle, motorcycle and carriage tires were also produced in small quantities. The total production of rubber footwear numbered 17,403,598 pairs, of which slightly more than two million pairs were boots, eight million pairs were overshoes and light rubbers, and more than six million pairs were canvas rubber-soled footwear. The output of mechanical rubber goods was valued at $4,373,646. Sundries and specialties were valued at $4,753,763.

The rubber industry of Canada is considerably larger than might have been the case except for two powerful circumstances: first, the Canadian import duties on rubber goods are very high, and secondly, Canadian goods have a tariff preference in entering other parts of the British Empire. American rubber companies have accordingly procured Canadian branch factories with the double-barreled advantage of getting in on the ground floor of a sizeable and growing market and at the same time bettering their competitive standing in the export trade to the British colonies, and even to Great Britain itself. The Canadian import duty on automobile tires, for instance, is 35 per cent

STATISTICS OF CANADIAN RUBBER INDUSTRY

Item	1923	1924	1925	1926
Establishments reporting ..	40	38	40	39
Capital investment	$56,061,625	$56,160,930	$65,562,734	$62,661,702
Employees on salaries.....	1,749	1,775	1,657	1,786
Salaries paid	$2,938,743	$2,831,943	$2,724,749	$3,096,334
Employees on wages	9,897	9,003	11,307	11,801
Wages paid	$9,390,374	$8,581,689	$11,418,416	$11,611,689
Cost of fuel	$770,212	$632,358	$598,834	$641,551
Cost of materials	$26,335,306	$24,519,236	$38,389,352	$49,902,189
Gross value of products	$56,512,947	$57,411,446	$78,229,574	$86,508,137
Net value of products.....	$30,177,641	$32,892,210	$39,840,222	$36,605,948

ad valorem which is quite sufficient to protect the market for the Dominion manufacturers.

Having begun to manufacture in Canada for the reasons just stated, many American companies have followed the practice of throwing export business to their Canadian plants even when there was no tariff advantage in doing so. This policy has been responsible for some of the growth of the Canadian industry. American export totals have suffered as a result. Among the American rubber companies having Canadian plants, or more than one plant, are Goodyear, Firestone, Goodrich, United States Rubber Company, Seiberling, Lee and Kleinert. One of the largest of the Canadian companies is Dunlop, a branch of the well-known British rubber concern.

As indicative of the extent to which Canada figures in the world trade in rubber goods, principally as the result of American companies sending export orders to their branch factories there, it may be mentioned that in the first six months of 1927 Canada exported 922,944 casings while the United States exported only 1,511,961, figures which are clearly out of proportion when the size of the American and Canadian industries is kept in mind. During the same period the United States exported 3,762,637 pairs of rubber footwear; Canada exported 2,777,955 pairs.

American investments in branch plants in Canada have been generally satisfactory and profitable. Goodyear of Canada, for instance, had profits in the year ending September 30, 1926, of $2,246,641, which was a record figure. Other American companies operating in Canada show every disposition to expand rather than contract. Firestone's plant at Hamilton, Ontario, is now having an important addition built to it. Within the last year Seiberling arranged for representation in the Dominion by purchasing the K. & S. company's interests.

The progress of the Canadian rubber industry in 1927 will be even more rapid than in 1926. Crude rubber imports, the best index to the industry's activity, have increased rapidly. During the 12 months ended September 30 of this year the imports of raw rubber amounted to 26,121 long tons as compared with 21,151 long tons in the preceding 12 months. More and more rubber goods are being used in Canada and more and more rubber goods are being exported. Without doubt the statement of the Dominion Bureau of Statistics a year hence will record an annual growth of even more than the satisfactory 10 per cent which the current statement shows.

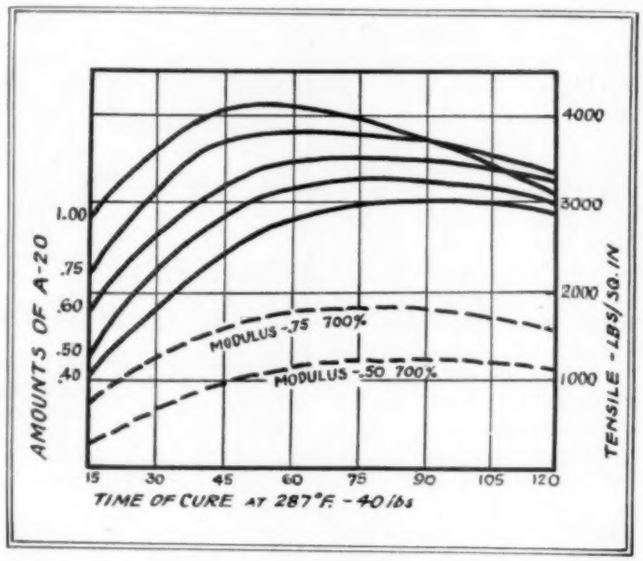
A-20—A New Aldehyde Accelerator

THE Rubber Service Laboratories Company, Akron, Ohio, has recently added to its line a new accelerator to be known as A-20, an aldehyde reaction product of a Schiff's base. It is described more specifically as "an aldehyde reaction product of a molecularly rearranged and polymerized aldehyde amine in which aliphatic aldehydes and an organic base are the raw materials."

A-20 is to be considered as a specific purpose accelerator, and is similar in its accelerating characteristics to other members of the company's "A" series, the one outstanding difference in this particular case being that A-20 is capable of utilization in white or light colored goods. The uniformity of cure and the aging properties imparted to rubber stocks by the other aldehyde accelerators of the "A" group are well known, but heretofore, because of their tendency to darken the rubber compound a characteristic brown color, they have not been used in white and light colored goods. A-20 has now been developed to meet this need.

Physically, A-20 is a thin liquid at all customary temperatures, and as it appears on the market is a mixture of active materials and an inert mineral oil, the mineral oil being added to facilitate the handling of the active constituent.

The results of an A-20 accelerated mix consisting of 100 parts first latex crepe, 5 parts zinc oxide, 3.5 parts of sulphur with varying amounts of A-20, are shown on the accompanying chart.



In molded tubes of light color A-20 can be used to advantage, giving a slightly lower tensile and lower modulus than A-16. Tests conducted to show the resistance to oxidation of A-20 stocks compared to D. P. G. stocks aged in the Bierer-Davis oxygen bomb, revealed the fact that ordinarily no anti-oxidant is required but that in extreme cases less anti-oxidant may be used.

A-20 is non-toxic, and gives no form of cyanosis, or skin rash, to the workmen using it. It is recommended that zinc oxide always be used with A-20, as full accelerating power is not developed without it.

Paper Liner Finding Wider Use

SINCE the introduction two years ago of the separator paper called "Linerette," by the Cleveland Liner & Manufacturing Company, Cleveland, Ohio, its adoption by leading rubber manufacturers has been widespread. After several years of development work, this paper liner was introduced to rubber manufacturers in 1925 and a small quantity used that year by several footwear plants for use with friction calendered stocks where it was found that the friction separated easily from the paper. It was also used in plying up stock by the drum method, between layers of fleece and wool linings and in pipings for footwear.

Since then, Linerette has found wider applications in other departments of footwear factories and is also being used in tire plants wherever sheet stock is piled up and cut with dies such as valve stem patches. The paper prevents adhesion of the stock under the action of the cutting die.

Linerette can now be furnished in any width from one to 54 inches and in rolls of 9, 12 or 15 inches in diameter. The paper used is what is commonly called 40 lb. stock and in 40-inch widths it gives 5 sq. yds. to each pound.

Hard Rubber in Silk Dyeing Plants

—*Its Use and Manufacture*

The Use of Highly Corrosive Chemicals in the Dyeing of Silk Has Necessitated the Development of Properly Compounded Hard Rubber for Tanks, Pipes, Pumps and Centrifugal Baskets—Problems Involved in Their Manufacture

By G. A. VURGASON

ALTHOUGH the silk industry manufactures the most delicate textiles, it is forced to make use of highly corrosive material in preparing its products. Tetrachloride of tin is the chief chemical in use. It will eat away any metal with which it comes in contact, and in fact the very fumes have a tendency to attack the steam pipes which frequently makes the installation of an exhaust system necessary. The replacement of the equipment destroyed by corrosion has been a continuous and serious expense to silk manufacturers. Over a great many years experiments were conducted with all sorts of materials in an effort to find something that would be practical and yet resist corrosion.

For many years following the discovery of the processes of hardening rubber, the silk manufacturer failed to see that the solution to his problem was in sight. The hard rubber manufacturers, however, saw a new application for their material and several of them through extensive experiments and great expense were able to produce formulas and compounds to withstand the most severe acids and at the same time having qualities of adhesion which would permit their being successfully applied to metal and other bases. Today hard rubber is used throughout the world for lining tanks, and for covering centrifugal baskets, exhaust fans, utensils and other equipment used in the silk industry.

Hard Rubber Lined Steel Tanks

The silk industry is made up of thousands of large and small plants. In every silk dyeing plant, whether it is large or small, there will be found numerous steel tanks, either lined or covered in their entirety with a coating of acid resisting hard rubber. Different hard rubber manufacturers have their different compounds and methods of manufacture. Some manufacturers apply the hard rubber directly to the metal, while others apply a soft rubber compound between the metal and the hard rubber covering. The advantage of the latter method is that the soft rubber layer acts as a cushion and should the hard rubber be accidently cracked, the soft rubber will remain intact and prevent the acid from reaching the metal.

In the silk dyeing plant there will also be found several centrifugal baskets. They are better known around the plant as whizz baskets. These are filled with silk, which has been dyed, in order to remove the excess dyestuff. To accomplish this these baskets are revolved at a tremendous speed and the liquid is thrown off by centrifugal force through the many rows of small holes in the circumference of the basket.

The whizz baskets are completely covered with a coating of hard rubber. There are several ways of making the holes in the baskets. Some manufacturers make them flat with the surface while others make them countersunk. Some are made solid with small hard rubber rods inserted in the metal basket and drilled afterward, while some manufacturers use small tubes and insert small mandrels, withdrawing them when completely vulcanized. The latter is the simpler method.

In the silk dyeing plant will also be found several sizes of funnels which are used for handling the corrosive liquids from carboys to smaller containers. There will also be found rubber lined pails as well as metal dippers of about six quarts capacity completely lined and covered with hard rubber These are used for dipping silk from one tank to another; they are fitted with wooden handles about 4 feet long.

Use of Hard Rubber Pipes and Pumps

The transfer of corrosive liquids in large quantities calls for pumps and piping and hard rubber again serves as a protective coating. The systems of pipe are hard rubber lined. There are several manufacturers making the hard rubber pumps. These come in different types — hand pumps, power pumps, steam pumps and centrifugal motor driven pumps. The acid ends or valve ends are usually constructed of all hard rubber parts that are molded. Some are made of cast iron and lined with rubber. The power ends need not be lined or covered. Although the process of applying the rubber is difficult, a satisfactory job can be obtained if great care is taken in the work.

Before hard rubber covering or lining is applied to any piece of metal equipment it is essential that the article be free from rust scale, paint or other pigments. All seams must be welded tight so as not to form air pockets. Rust has a tendency to scale off and the rubber would be loose on the metal wherever it was applied over rust. Paint and pigments would form a gas under the rubber and would thereby force it away from the metal during the vulcanizing process. Air also expands when heated and would have the same effect as the swelled gas from the pigments. Accordingly, it is necessary to force out all air from between the rubber and metal. When crevices cannot be welded it is a good practice to fill them with babbitt.

All metal to be covered should be given a bath in a solution of three parts sulphuric acid and two parts of water. This pickling bath will remove all rust. If paints or other pigments are to be removed, a solution of equal parts of wood alcohol and benzol can be used.

After the metal is thoroughly cleaned and the seams are filled, the article is ready for a coating of cement. A gen-

erous coating should be applied and let dry. A good cement can be made from one pound of smoked sheet rubber dissolved in nine quarts of benzol, to which is added one-half pint of ground rosin dissolved in one quart of benzol. Naphtha can be substituted for the benzol if desired.

The hard rubber stock to be used should be built up on the calender drum in three layers of 3/16 in. Before being applied all rubber should be cemented on one side and let dry. If it is put on while the cement is still wet there is no chance for evaporation and a steam blister would result when the job was vulcanized.

The hard rubber stock should be applied in sections since large sheets are difficult to handle and are liable to trap air. In lining a tank 3 feet deep, 3 feet wide and 6 feet long, for example, it would be best to start on the bottom. This would call for three pieces, each 24 in. long. All seams should be cut on a skive as this method insures a tight joint. The sides should be in three sections and the ends in two sections. When completely lined, corners should have skived piece fitted in so as to make all tight joints. These can be cut out by hand, but a better method is to run them on the rod machine.

It is very important that the rubber be applied absolutely tightly as all air must be excluded from under the rubber. If air is trapped it will result in a blister at that spot. If a slight hole is left, the acid will creep through and in time eat away the tank at that spot. In applying the rubber it is a good practice to have a helper hold one end up while the other rolls it down. In this way the rubber can be seen to join perfectly to the surface being covered and all the air is forced out ahead of the roller.

Thorough rolling cannot be stressed too much. It is impossible to roll it too much. If some air is trapped, continual rolling will roll it into a blister and it can be picked out with a small awl before the job is vulcanized. If a hole is made to allow air to escape, it should be carefully closed up.

Tanks or other articles made in accordance with these instructions need not be wrapped or held in place with soapstone or other minerals, except in cases where the article has such a pitted surface that it is impossible to exclude all the air. In such cases it is advisable either to pack them in soapstone or wrap the outside and pack the inside. This pressure will hold it in place and compress the air under the rubber during vulcanization.

It is advisable when vulcanizing to bring the heat up gradually. The first half hour should be about 25 pounds, increased to 35 pounds for the second half hour and run up to 50 pounds for the balance of the heat.

Stabilite—A New Anti-Oxidant

A NEW anti-oxidant which, it is claimed, not only prevents oxidation but also retards sun checking, has been placed on the market by the C. P. Hall Company, of Akron, Ohio, under the name of "Stabilite." The new product which is the result of long experimentation, when used in tires is said to add to the effective quality of the treads by preventing the rapid deterioration following surface overcure. It also aids in the dispersion of carbon black in stocks. In inner tubes "Stabilite" is said to aid in the running of the stock in the factory, eliminate oxidation on the dealers' shelves, and increase the heat resisting properties in service.

Stabilite is a creamy white solid with a melting point of 60° C. It melts on the mill and goes into the batch easily. It is claimed to have no deleterious effects on the health of the workmen.

Stocks containing Stabilite show a marked improvement in tubing quality and at the same time show no tendency toward lack of adhesion. In the carcass the flexing life as determined by the Bureau of Standards machine may be increased as much as 100%.

The material is said to be particularly advantageous where small quantities of powerful accelerators are used, in that it eliminates the effect of variation of absorption by the carbon blacks. In tests made as to the effect of Stabilite on heavy duty tubes, the following figures were determined:

	Without Stabilite	With 1½% Stabilite
Original Tensile strength of Tube	3,025 lbs.	3,100 lbs.
After use in Bus Tire at high speed.	425 lbs.	2,650 lbs.

Tests showing the effect of Stabilite on the surface portion of tread stocks which in any tire are necessarily overcured were as follows:

> "A six-inch tire was made and cured the regular length of time. One half the tread differed from the other half only in that it contained 1½% Stabilite. The tread was stripped off and tested and then subjected to the Geer Oven aging test."

Of tensile tests on the outer portion of the tread, the following results were noted:

	Without Stabilite	With 1½% Stabilite
Original tensile strength of Tread	3,860 lbs.	3,890 lbs.
After seven days in Geer Oven	1,930 lbs.	3,500 lbs.
After fourteen days in Geer Oven	1,440 lbs.	3,370 lbs.

Actual road test on a similar tire cured in the same heat showed the tread with Stabilite to be much less subject to cutting, splitting or chipping.

10 YEARS AGO

Items Reprinted from November 10, 1917, issue of THE RUBBER AGE

TO show their faith in John Purroy Mitchell, one of the candidates running for Mayor in New York, a band of 500 men allied with the rubber industry in the Metropolis, marched five miles through the streets on the night of November 1. The parade brought out many of the most prominent rubber men of the city. Robert C. Fisher was in charge of arrangements and others on the committee were W. E. Bruyn, H. Hubbard, W. G. Ryckman, A. Spadone, C. T. Wilson and H. S. Vorhis.

* * *

Volunteers for the United States tire repair service, connected with the Army, are now being called. Men who have had the necessary experience can enlist through their labor department foremen.

* * *

Announcement was recently made of the final ranking of the various trades in the Liberty Loan subscriptions in the New York Federal Reserve District comprising the five boroughs of New York City. The rubber industry ranked sixteenth with subscriptions amounting to $5,554,650.

* * *

Operators were not anxious to push trading in distant futures. Smoked sheets closed at 61 cents for spot and 61½ cents for nearby. Trade authorities predict that the total production of plantation rubber this year will amount to more than 200,000 tons.

* * *

Fisk employees have subscribed for $333,200 worth of Liberty bonds in a seven-day drive. This averages $65.07 for each of the 5,121 subscribers.

* * *

According to an estimate by H. S. Firestone, sales of the Firestone Tire and Rubber Company this year will run to $60,000,000, an increase of almost 100 per cent over last year.

THE GENTLEMAN FROM MINCING LANE
reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The London Letter

This Week the Gentleman Talks About Overhauling Machinery

LONDON, 28th October, 1927.

"THE Governments of the territories concerned will be asked to overhaul the machinery of the scheme with a view to increasing the efficiency of its working." In these words the rubber world received the long-awaited decision of the British Colonial Office as to what to do about restriction after 1st November. But if the overhauling by "the Governments concerned" does not prove sufficient to make the scheme as now drawn thoroughly workable and set John Bull's rubber business to rights, then the Colonial Office will put into effect this other proposition which was prominent in its announcement: "If it is considered that any changes are necessary, full right is reserved to make them as from 1st February, 1928, as long notice being given as may be practicable in the circumstances."

There you have it all. The British are proud—justly proud—of their ability as Colonial administrators. Just as they have solved other knotty problems in the Colonies, by means of a firm hand, so they intend to solve the rubber problem. *They intend to make the Stevenson Scheme work!* It must work! And it certainly won't do to be changing the scheme constantly. That in itself would be an admission of weakness and defects.

So the program is—as was confidently expected on all sides—to tighten up the present restriction scheme so as to make 60 per cent in theory work out as 60 per cent in practice. But if it can't be made 60 per cent in practice with the basic rules of the scheme as they are now drawn, then the exportable percentage may have to be cut to 50 per cent or other changes may have to be made by the Colonial Office. The necessity for fundamental changes may be avoided altogether if the Dutch should decide to take at least a small share of the restriction burden—but more of that anon.

EARLY last week London rubber interests were heartened by cables from Malaya giving the details about the new system for assessing standard production and the new standard of tapping. No doubt you will cover the technical features of these new regulations elsewhere in your issue so that it only remains for me to give you some idea of London's estimate of the effect of these changes. Symington and Sinclair have figured that there will be a reduction (in theory) amounting to one-sixth of the present production figures—about 21,000 tons on the 6 per cent restriction basis. But this figure will be cut down somewhat further because of allowances which will have to be made on account of the steady maturing of various areas. Thus it may be seen that this item alone will not be enough to re-establish the gradually slipping balance between consumption and production.

Following the receipt of the cables from the East but before the announcement of the Colonial Office, rubber London had some evidence that something was being done to tighten up the machinery of restriction and the rubber market, and the rubber share market as well, was buoyant. Other news was expected to follow. Then later in the week came the Colonial Office announcement of which I have already quoted a part. Some people came to the conclusion suddenly that the Colonial Office statement cancelled the cables from the East and that nothing concrete was being done just then in the way of tightening up the screws. Accordingly, the price of rubber fell off on Friday, October 21.

By Monday, October 24, the dubious gentlemen who had been selling on Friday, their friends, or their enemies—somebody anyway—were reassured as to the accuracy of the cables from the East, and raw rubber prices went up again. Thus London was depressed and then reacted upwards. Early advices from New York seemed to indicate that the market there came to the same first conclusion as did London. Will they come to the second? Some people here think not. They think New York won't read the grim determination that London sees in the Colonial Office announcement and consequently will fail to buy rubber while it is still cheap at 16, 17 or 18 pence per pound.

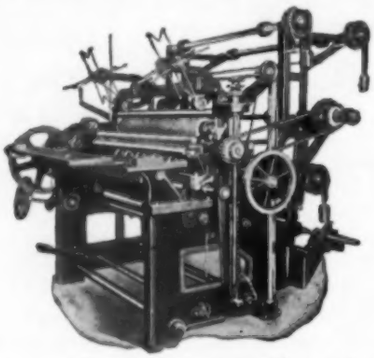
THERE was a lot of talk not long ago in your country about "controls." Well, the raw rubber "control" started with the Stevenson Scheme. Now there are several little auxiliary controls flanking the Stevenson Scheme. Groups of consumers have a pool and groups of producers are holding stocks off the market. Another control may put in an appearance to help stablize raw rubber prices, namely, a Dutch selling combine. Although the Dutch are very much opposed to Government controls, they have several nice little air-tight private ones which are models that might be used for a rubber combine—models in efficiency if not in form. While London interests are as yet none too hopeful about getting help from the Dutch in this way, there is the feeling here that for several reasons the Dutch are more amenable to such ideas. Three weeks hence representatives of the important Dutch interests favorable to a selling combine have an engagement to meet leading British growers to see what can be done about it. It is recognized that there is not much hope, at the outset any way, of getting a majority of the Dutch acreage into any voluntary scheme of this sort but possibly the thing could be done on a small scale, perhaps on such a scale as to have an effect at least equal to the new Malayan re-assessment proposals already discussed.

In Britain the general business prosperity of the United States has always been watched with keen eyes. But the run of American prosperity has been unbroken for so long that the habit of mind has become fixed that it will never end—at least, that it is not going to end this fall. This, of course, has a direct tie-up to rubber consumption.

American rubber consumption has not failed to mount

(*Continued on page* 139)

CAMACHINE 6-C



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An Interview with
Sir John George Beharrel

Managing Director
DUNLOP RUBBER CO., LTD.

In Which the Head of One of the World's Largest Rubber Organizations Reviewed Some of the Events of His Busy Life—Expert on Statistical Matters.

By A. C. BLACKALL

Sir John George Beharrel

WITH the famous Dunlop Rubber Company, Limited, so much in the limelight in all parts of the world, and particularly so in America, on behalf of readers of THE RUBBER AGE I sought an interview with Sir John George Beharrell, D.S.O., the managing director, with the idea of getting first-hand information regarding some of the most interesting data of his life which, as will be seen, has been a very useful, eventful, and crowded one.

I found Sir George (as he is almost universally known) in his handsomely appointed office at St. James' House, the company's new London headquarters in Ryder street, S. W. He is a typical hard-headed north country business man, who barely looks his 54 years, but he smilingly informed me that he was born in York in 1873. In figure he is about medium height, rather stockily built, has a genial manner and a keen eye that speaks more eloquently than words can tell of the why and wherefore of the many successes of his career.

Sir George was educated at King James' School, Almondbury, and afterwards at Leeds University. At the age of 15, in 1888, he entered on his business career when he secured an appointment in the secretary's office of the North Eastern Railway Company. He was later transferred to the general manager's office and became Parliamentary assistant to Sir George Gibb. In due course he joined the freight department and at the outbreak of war he was occupying the position of freight manager and commercial agent. He then joined Sir Eric Geddes at the Ministry of Munitions. By the end of 1915 Sir George had been made responsible for the provision of textile and other material for empty cartridges, and later he was also in charge of the statistics of requirements and output of filled big gun ammunition. Sir George is particularly and justifiably proud of the great work done by the Ministry of Munitions and its wonderful achievements in times of greatest stress.

In the August of the following year (1916) Sir George accompanied Sir Eric Geddes to France in connection with the transport problem, when he was appointed Assistant Director-General of Transportation, with the rank of Lieut.-Colonel, and as Assistant Inspector-General of Transportation with charge of statistics for all theaters of war. He was mentioned in dispatches and awarded the D. S. O.

In May, 1917, when Sir Eric Geddes was appointed Controller of the Navy, Sir George Beharrell became Director of Statistics. After the Armistice he was associated with Sir Eric in expediting demobilization by the co-ordination of the various departments concerned. He was one of the small staff that assisted Sir Eric in the passage of the Ministry of Transport Bill through Parliament. When the Ministry was formed in August, 1916, Sir George Beharrell was appointed Director-General of Finance and Statistics. In June, 1919, he was knighted in recognition of his services during the war. In 1922 he resigned from the Ministry of Transport in order to take up his present position of Managing Director of the Dunlop Company.

Apart from his position as managing director of the Dunlop Company, Limited, of Fort Dunlop, Sir George is a director of the Imperial Airways, Limited, a concern in which he takes the keenest interest. He is also a member of the Advisory Committee of the Colonial Office in connection with the Rubber Restriction scheme. Furthermore, he is now a member (and former member of the Council) of the Institute of Transport, and President of the India Rubber Manufacturers' Association.

The International Society of Motor Manufacturers and Traders, of which Sir George is now President, was formed in 1902, and now represents the manufacturers of and concessionaires for, automobiles, commercial gasoline, steam and electric vehicles, motor components, accessories and tires in Great Britain. Sir George pointed out the great part the Society has played in the difficult work for standardization. One of the Society's main activities has been the organization of automobile expositions. It is also responsible for the annual International Motor Show in London.

Sir George is President of the World's Transport Congress, whose first meeting in London is to be held from November 14 to 16 this year. Numerous American delegates are expected to be present.

It was rather difficult to get Sir George to unbosom himself to the extent I should have liked; he contented himself by saying that most of his achievements were now "dead meat" and would not be particularly interesting.

THE LONDON LETTER

(*Continued from page* 137)

steadily to higher levels, but will it do so indefinitely? Some American observers consider that the degree of success achieved by Mr. Ford with his new car will determine the course of the American general business barometer this season. Whether this is true or not, certainly a good part of the rubber-grower's future hangs on the question of whether Mr. Ford will fill the gap in American car production thus far this year. Mr. Eric Miller at Harrison and Crosfield's meeting hung his optimism on this peg, pointing to the large consumption of rubber by America in 1927 without the Ford production, and assuming that the new Fords will carry American consumption to even higher levels.

Yours faithfully,
THE GENTLEMAN FROM MINCING LANE.

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EDITORIAL COMMENT

Organizing for Safety

IN what was probably the most striking address before the recent meetings of the rubber section of the National Safety Council, Paul Van Cleef of Chicago gave the rubber industry some straight talk about the need for safety work in rubber factories and the failure of the companies to see that it was done. Mr. Van Cleef spoke on "The Important Place Safety Holds in the Rubber Industry," a subject he has apparently studied with care.

The rubber industry undoubtedly contains as many possible sources of accidents as any other, the speaker pointed out. Rubber workers deal with high powered equipment, dangerous chemicals, hazardous solvents, electric current and so on. Many parts of equipment cannot possibly be guarded without interfering with operations but, on the other hand, there are scores of precautions which can be taken without inconveniencing any process. The cost is a few dollars and a little attention. It is the failure of so many manufacturers to take these precautions that especially concerned the speaker.

Mr. Van Cleef was able to give figures to show that the number and severity of accidents in the rubber industry was not being reduced. The data for 1926 was convincing for it showed that there were approximately 20 deaths, 172 cases of permanent disability and over 9,600 cases of temporary disability incurred in rubber factories in that year.

Since 1919 the rubber industry has been represented by a special section in the National Safety Council. At the present moment only 48 rubber manufacturers hold membership in it. Mr. Van Cleef regards this as evidence that the industry does not have the correct attitude toward safety work. In this he is probably right, for many of the largest and best-known companies have held membership in the rubber section since it was organized. If the section were not correctly organized and operated such companies would desert it. The fault more probably lies with the non-member companies who have yet to see the need for organized as opposed to haphazard safety work.

Everyone would admit that safety work, and effective safety work at that, could be done outside the safety council, but membership in that body acts as a spur and an aid in making rubber factories safer places to work in. It does not always take a direct expenditure of money to do safety work. What is required is the building up throughout the plant of a general interest in safety. The primary source of such an interest or spirit is an association of safety experts. Mr. Van Cleef says joining hands with the rubber section doesn't cost much. It ought to be at least worth looking into.

Uncertainty

IT would be difficult to say just who was pleased with the action taken by the British Colonial Secretary in the matter of rubber restriction as that now famous scheme got ready to start on its sixth year. A year ago the same officer was being congratulated on having introduced at least one element of certainty into a plan which has been a puzzle from its inception. That bit of definite action was the introduction of six basic regulations for the scheme with the statement that they would stand for a year. Now we get the throw-back with a vengeance. The colonies concerned will be given three months for doctoring the scheme to make it more efficient and if at the end of that time it appears necessary, the Colonial Secretary will step in and make such alterations as he believes wise. As reported elsewhere in this issue, Malaya has already made two moves toward local revitalizing of the scheme. It is practically impossible to forecast accurately just what they will mean. Three months hence they may not mean anything for by that time the Colonial Secretary may have his diagnosis completed, find himself disgusted with the home remedies and decide to operate.

And in the meantime—what of the manufacturer who must buy rubber to cover his requirements? In a market utterly controlled by artificial factors which he cannot judge, he must take committments in order that his factory may operate. And he will be blamed for hand to mouth buying, for playing as closely as he dares. His action will be construed as part of a conspiracy to defeat restriction. Trading on the Rubber Exchange shows a tendency to quiet down also when things are too uncertain. That's taken to be part of the conspiracy too. As a matter of fact, both are merely signs of extreme discomfort—there's very little uncertainty about that.

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

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French Process

ZINC OXIDES

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FLORENCE GREEN SEAL: Zinc Oxide of greater apparent density than "Florence White Seal", but of equal chemical purity, color, brightness and smoothness. Used in high grade insulated wire and cable and molded specialties.

FLORENCE RED SEAL: Of approximately the same apparent density as "Florence Green Seal", but less brilliantly white and somewhat coarser grained. A popular brand for insulated wire and cable, molded specialties such as wringer rolls, typewriter platens and packing.

No. 6 of a series of advertisements describing the specific uses of each of the EIGHT Brands of Zinc Oxide supplied to the Rubber Industry

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NEWS of the INDUSTRY

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RUBBER ACCOUNTANTS MEET AT CLEVELAND

Hold Second Regional Conference With View to Adopting Uniform System of Cost Accounting Throughout Rubber Manufacturing Industry.

THE second of a series of regional cost conferences sponsored by the Accounting Committee of the Rubber Association of America was held on October 27 at the Hollenden Hotel, Cleveland. Twenty-four accountants representing nineteen rubber companies were present.

H. D. Hoskin, assistant comptroller of the Goodyear Tire & Rubber Company and chairman of the Accounting Committee, reviewed briefly the history of the Accounting Committee and its work to date, and emphasized strongly the advantages of adopting the uniform system of cost accounting and general accounting recommended by the committee.

M. G. Burnett, assistant comptroller of the United States Rubber Company, made an interesting informal talk on departmental burden distribution. He described in detail the methods used by his company of allocating burden charges as far as possible, direct to productive departments, and pro-rating the various non-productive expenses on the various bases recommended in the Rubber Association's standard accounting practice. The speaker also related some interesting anecdotes on the troubles they had experienced in securing a proper departmental distribution, pointing out many grievous errors in costing that they had found in the development of their cost system. His paper was followed by a very spirited discussion among those present of the various recommended practices for burden distribution.

Distribution of Expense

A paper on commercial expense distribution written by Mr. F. J. Sullivan, comptroller of the Philadelphia Rubber Works Company, was read, although the author was unfortunately unable to attend in person. This paper particularly stressed the need for proper classification of administrative and selling expenses, in order that the cost might be properly allocated to production in the most equitable manner.

One of the interesting features of the meeting was the question box session in which members attending were permitted to ask questions on any branch of accounting in the rubber industry. Other members in attendance gave their experiences in answer to questions on such subjects as the handling of adjustments, returned goods, seconds and defective goods. All those present were highly in favor of continuing such conferences and felt that they would be of material benefit to all concerned, and that in all probability a much larger attendance and more spirited discussion would be obtained in the future.

The Rubber Association was represented by C. W. Halligan, manager of its accounting department, who also acts as secretary to the accounting committee.

RUBBER RESPONSIBLE FOR DROP IN IMPORTS

The Department of Commerce has announced that the chief factor in the sharp decline in value of American imports during the first half of the current year was due to the drop in crude rubber prices. Crude rubber imports decreased $137,000,000 in value, which represented 75% of the total decline in imports. The total decrease in all imports during the first half of the year was approximately $187,000,000. The average price per pound of crude rubber imported during the first half of 1926 was 68.53 cents, while the average for the same period of 1927 was 36.79 cents per pound.

TO CONDUCT RESEARCH FOR SYNTHETIC RUBBER

New rumors relative to the interest of the German chemical combine in developing synthetic rubber have been heard in various chemical quarters and it is now reported that the combine, the Interessen Gemeinschaft Farben-industrie A-G., will institute a program of research looking toward the discovery of a practical formula. A more recent rumor carries the story that a new and promising process has been developed already, the rights for which have been secured by the I. G. No definite pronouncement has been made by the I. G., but is it understood that in reply to a request by a German contemporary, for a confirmation of these rumors, the answer was made that "the notices which appear in the German daily press on the technical production of synthetic rubber do not correspond with the facts."

GOODYEAR INCREASES PLANTATION HOLDINGS

Purchases 29,000 Acre Tract in Sumatra for Rubber Planting—Company Now Holds 50,000 Acres in Far East—Will Clear and Plant Immediately.

A CONSIDERABLE enlargement of the rubber plantation holdings in Sumatra of the Goodyear Tire & Rubber Company, by an additional 29,000 acres, has been announced by P. W. Litchfield, president of the company. This new acquisition will bring the total area in the Far East now owned by the Goodyear company close to 50,000 acres, of which 22,000 acres are now in bearing or planted.

The new property, which was purchased from a Japanese syndicate, is located about 150 miles south of the original Goodyear plantation and is on the Bila river which permits easy transportation to the sea. A new railroad is also projected by the Dutch Government through the tract. It has been announced that work will be started immediately in clearing the new property and setting out rubber trees. The development work will be under the direction of J. B. Ingle, managing director of the Goodyear Orient Company and O. D. Hargis, general manager of Goodyear's present plantation. The present American and Dutch executive personnel will be gradually increased as the planting program continues. Javanese, Chinese and native labor will be used. The Bila district has long been regarded as one of the best rubber growing areas in Sumatra.

This purchase adds another important unit to the Goodyear production group, there being Goodyear tire factories now at Akron, Ohio; Toronto and Bowmanville, Canada; Los Angeles, Sydney, Australia; and Wolverhampton, England; tire fabric mills at Killingley, Conn.; New Bedford, Mass.; Los Angeles, Cedartown, Ga.; and St. Hyacinthe, Quebec.

The company also has a 45,000 acre cotton plantation in Arizona and its own coal mines.

Smuggling in Malaya

Official estimates, made during recent debates before the Federal Council of the Federated Malay States, place a figure of 24,000 tons per annum as the probable amount of crude rubber smuggled out of British Malaya, under the present operation of the restriction scheme. Stricter enforcement of the regulations against smuggling is being advocated. The penalty for violation has been made uniform throughout Malaya and now imposes a two-year sentence.

TIRE DEALERS TO MEET AT LOUISVILLE NOV. 14

Annual Meeting of National Association to Last Until November 17—Program Will Consist Chiefly of Discussion of Current Problems of Tire Retailing.

THE annual meeting of the National Tire Dealers' Association will be held in the Brown Hotel, Louisville, Ky., November 14-17. An energetic campaign for new members has been carried out by the organization during the past year and the increase in membership is expected to be reflected in the attendance at the Louisville meetings.

The program at Louisville will consist largely of discussion of methods for bettering the retail tire business. Such topics as national accounts, tire size standardization, consumers' price lists, installment selling and department store competition are to be discussed. H. V. Eva of Duluth, president of the Association, will appoint members to lead the discussion of these subjects. Two addresses by editors of tire dealer journals are scheduled, but otherwise the success of the program will apparently depend on the readiness with which the delegates respond to the invitation to air their views.

The Louisville get-together will give many of the N. T. D. A. their first opportunity to meet the new secretary-manager of the organization, H. F. Porter. S. A. Rowe of Milwaukee resigned the office in October and Mr. Porter was chosen to succeed him. Coincident with the change in officials, the central office of the organization was moved from Milwaukee to Akron. Mr. Porter comes from Bridgeport, Conn. He was educated at Cornell and has had a varied business career, including tire manufacturing and retailing. Mr. Eva has issued a statement indicating his gratification at being able to secure a man of Mr. Porter's qualifications for the managership.

New Officers to Be Elected

New officers will be elected on the last day of the convention and at the same time a meeting place for next year will be selected. By means of field agents and the determined efforts of the Association officers, several local associations of tire dealers have been formed in various states during the last year. The campaign to increase the number of such local bodies, all of which cooperate closely with the parent organization, will be continued.

One of the features of the Louisville meeting will be the awarding of prizes by the Falls Rubber Company of Cuyahoga Falls, Ohio, for the best slogans offered in a contest which the company has been conducting. The evening of Tuesday, November 15, will be devoted to group meetings of dealers who handle the same brand of tires. Manufacturers' representatives will be asked to attend these group meetings in order that common problems of the dealers may have immediate attention. The Association's annual banquet will be held on the evening of November 16.

GOLF BALL IMPORTS GO TO HIGH FIGURES

Golf balls continue to come into the United States at the rate of over 300,000 per month. In September the number imported totaled 319,150, valued at $133,108, or 41.7 cents per ball. The total number of golf balls imported for the nine months of the current year was 2,660,745. Practically the entire imports are from the United Kingdom. During 1926 the total number imported amounted to 3,361,248 and was valued at $1,377,205.

AUTOMOTIVE ACCESSORY ASSOCIATIONS MERGE

The consolidation of the Motor and Accessory Manufacturers' Association and the Automotive Manufacturers' Association has been announced. H. L. Horning, of the Waukesha Motor Company, president of the former association, and John W. Anderson, of the Anderson Company, Gary, Ind., president of the latter, issued simultaneous statements after the boards of directors of the two associations had unanimously approved of the association. The enlarged organization will bear the name of the Motor and Accessory Manufacturers' Association, and headquarters will be continued at the offices of that association in New York, with M. L. Heminway as general manager.

Auto Registrations Gain

Motor vehicle registrations in the United States for the first six months of this year showed that there were 1,374,578 more cars and trucks in use than during the same period of 1926. This represents an increase of 7 per cent. The revenue from registration and licenses totaled $272,119,534, of which $188,525,679 was allotted to State highways $47,937,641 for local roads and $21,795,330 for road bonds.

Practically every State and the District of Columbia showed an increase in registrations, the only decreases being in Arkansas and Louisiana, where flood conditions were the contributing cause, Florida, which is still suffering from the real estate depression, Montana, Nebraska and South Dakota. In no case was the decrease more than 3 per cent and in three instances did not exceed 1 per cent.

Grimley Married

Mr. and Mrs. A. C. Grimley of Jersey City, returned on October 25 from their honeymoon motor trip through the East. Mr. Grimley is a member of the staff of the Rubber Association of America, having charge of all statistical activities of the organization. He was married on October 11 to Miss Bertha Machemer.

FISK CORD FABRIC MILL SHUTS DOWN TEMPORARILY

The New Bedford mills of the Fisk Rubber Company, Ninigret division, were closed for an indefinite period on October 29, due to the seasonal slackness and the accumulation of sufficient cord fabric to take care of the needs of the tire factory for some time. In making the announcement of the shutdown, C. P. Harrington, the general manager of the plant, stated "that due to the conditions prevailing at this time in the tire industry, it has been decided not to follow the usual practice of storing fabrics in excess of requirements but operations would be resumed when conditions warranted."

A program of curtailment has been going on for some time in the mill and decision to close down temporarily has not come as a surprise. Heretofore, it had been the practice to operate throughout the seasonal period, thus necessitating the storage of a considerable quantity of cord fabrics throughout the fall and winter months.

To Fight Auto Excise Taxes

Rubber manufacturers, particularly those who include automobile tires among their products, are joining actively with the automobile manufacturers in the fight to induce Congress to remove the automobile excise taxes during the coming session. A campaign is planned to acquaint the finance committees of the House and Senate of the feeling of the tire and auto industries in the matter. The automotive industry aided in getting the excise taxes removed from tires and tubes and the two industries will again join forces in an attempt to free automotive products from a tax which is regarded as unfair at this time.

Rubber Boot Specifications

The Bureau of Standards has made public the government master specifications for rubber hip boots and heavy and light short rubber boots. The requirements contained in these specifications became mandatory for all departments and independent establishments of the government on September 10, 1927, and will hereafter be the basis for purchases of these articles by the government. The specifications had previously been promulgated by the Federal Specifications Board on June 10 of this year. Copies of the circulars are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at 5 cents per copy.

Tires to Show Origin Mark

The British Board of Trade has favorably recommended the proposal that automobile tires and tubes imported into the United Kingdom show a mark as to the country of origin and a draft bill has been prepared for submission to Parliament. This action is almost tantamount to actual enactment.

BRITISH VIEWS DIFFER ON RUBBER'S FUTURE

H. Eric Miller Is Optimistic Over Increased Consumption—A. A. Baumann Is Skeptical of Statistical Position—Ford's Demand Only Hope.

SPEAKING before the annual meeting of Harrisons & Crosfield, Ltd., of London, recently, H. Eric Miller, chairman of the board of directors, expressed his usual confidence in the general rubber situation and declared on the basis of consumption during the first nine months of 1927, the years' total absorption would amount to 600,000 tons, as against 545,000 for 1926. Mr. Miller made two particularly interesting statements in the course of his address. He stressed the fact that while the Netherlands East Indies had been ahead of British Malaya in the matter of research work, the British were now making up for lost time through their own Rubber Research Institute, and that the H. A. P. M., the United States Rubber Company's plantation organization in Malaya, had developed considerable research material through their own scientific staff and had made this material available to the institute.

Mr. Miller's other interesting statement was that the plantation industry should pay more attention to the general tendency of the industrial world to consolidate into larger units and to seek closer cooperation. The selling arrangements of the rubber industry at present constitute its weakest link.

Baumann Is Pessimistic

Next to Mr. Miller, there is probably no one better known in the British rubber industry than Arthur A. Baumann. Consequently, it is interesting to note that he differs widely from Mr. Miller in his views on restriction, and at the annual meeting of the Caledonian (Ceylon) Tea and Rubber Estates, Ltd., held the day following that of Harrisons & Crosfield, he made an effort to refute Mr. Miller's optimism.

Mr. Baumann declared Mr. Miller's speech to be full of statistical optimism.

"But I have grown rather sceptical of statistics," he said. "I am too old a bird to be caught by statistical salt on my tail. From my viewpoint in not being able to hand out, and not having any prospect of handing out 40 per cent on rubber, I decline to look through Mr. Miller's rose-tinted spectacles. I say that, so far as it has gone, restriction has been a failure, because it has failed to do what it was intended to do, namely, to restrict the amount of rubber and keep the price at something like 1s. 9d. to 2s. It has done neither.

"There seems to be only one bright spot on the horizon. It is this, that Mr. Ford, who produces half the automobiles in the world, has been for some months out of business. He has been changing over from one form of car to another, and is about to launch 550,000 new cars on the world. Given five tires to each car, that means a considerable amount of rubber to start with, and I do not know how many cars a day he turns out—but it is enormous. That is the only prospect I see of our getting help in the immediate future. Smuggling, I hope, will be stopped, and in the course of a few weeks we shall know if the new restriction scheme is more stringent and steps are being taken to stop the accumulation of rubber on estates and an indiscriminate increase of planting programs."

As reported in the last issue of THE RUBBER AGE, the annual dividend declared by Harrisons & Crosfield for the year ended June 30, 1927, was 40 per cent. Profits for the year totaled £365,533 which established a new high level for annual returns, and exceeded the previous record for 1925-26 by no less than £26,420. The following comparison shows the financial position of the company during the last three years:

	1926-7	1925-6	1924-5
	£	£	£
Net profit	365,533	339,113	276,902
Brought in	82,023	75,736	70,706
Available	447,556	414,849	347,608
Prior dividends	137,800	137,800	137,800
Deferred and management dividends	180,675	158,026	104,072
Do. per cent	40	40	30
Reserves	40,000	37,000	30,000
Carried forward	89,081	82,023	75,736

Samson Rubber Co. Gains

In announcing the regular quarterly dividend of 2 per cent on the preferred stock of the Samson Tire and Rubber Company, of Los Angeles, A. Schleicher, president, stated that the sales in the current year were running ahead of last year by approximately 80 per cent in dollar value and 150 per cent in unit value. The company has just completed the financing of a large manufacturing expansion program and continues to make substantial dividend payments on its common stock.

Winners of the Vulco Tire Sales Contest

THE Gates Rubber Company, of Denver, Colo., inaugurated a contest last July offering a free trip to Denver and tours through the Rocky Mountains with all expenses paid to the high man in Vulco and Congress Tire sales in each major jobbing organization from coast to coast.

The contest ended October 1 and the winners in each case were determined by the officials of the jobbing organization employing them. The men spent the week of October 10 to 16 as guests of the Gates company and besides trips through the factory, they were taken on tours through Denver and the National Rocky Mountain Parks. The above picture of the group was taken at the Gates plant on the occasion of their visit.

AIRPORT BOND ISSUE TO BE VOTED AT AKRON

Akron will register its opinion, which will probably be favorable, on election day, November 8, upon the $900,000 airport bond issue, the proceeds of which will be used in the construction of one of the finest airports in the country. The project is being supported by the leading citizens of the city and business houses.

Commenting on the proposal, P. W. Litchfield, president of Goodyear Tire & Rubber Company, said:

"Possibly Goodyear's close association with aeronautics and the progress of air transportation makes us realize more keenly the necessity of every progressive city providing itself with an airport at the earliest possible time, if it is going to keep pace with, and take advantage of, air transportation.

"We are negotiating for, and expect to receive an initial contract for a large dirigible, running around $4,500,000. If we obtain this contract and no hangar is available in Akron probably 20 per cent of the work will be done here, and 80 per cent elsewhere. In case added facilities are provided here, 80 per cent would be done here and 20 per cent elsewhere.

"Any investment which we may make here will tend to still further insure development in this city of an aircraft industry. Should Akron have a suitable airport when we are ready to go ahead it would be the best assurance that it would be more favorably considered as the center of our activities than other cities.

"All of this, however, is incidental, and only a contributing reason for Akron's need for an airport. An airport here will attract airplane and accessory industries and also stimulate an interest on the part of Akron people and capital."

MANY RUBBER DISPLAYS AT LONDON AUTO SHOW

Twenty-one Tire Companies Exhibit Together With Other Rubber Goods Manufacturers Supplying Auto Trade —Rubber Tail Lamps Shown.

UNLIKE the big American automobile shows, the International Automobile Show in London, which ran for nine days in October, had many exhibits by rubber companies. Twenty-one American, British, French, Italian and German manufacturers exhibited tires, while other motoring rubber products were exhibited by a good number of firms.

The biggest tire stand was, of course, that of the Dunlop Company, which showed examples of their various tires, including the Kempshall, the cheap tire Dunlop is now producing. The Kempshall was recommended by the firm of motorists who do a small mileage each year, as it is most suitable for cars that are kept on the road at week-ends only. Their life under such use is practically as long as the other types of Dunlops of which daily use is made.

Dunlop also exhibited its patent detachable wired wheel steel artillery wheel and wheel discs. Step mats, brake pedal rubbers, tire pumps and repair outfits of all kinds for tires were among the accessories seen on the stand.

Unbreakable flexible rubber tail lamps were shown by Flexible Lamps, Ltd., of London. It is claimed that these lamps cannot be damaged by collision and that broken glasses can be instantly replaced. Being vibrationless, the filament life of the bulb is prolonged and cannot be damaged through road shocks. These lamps are claimed to be the only things of their kind produced. They are shown in bright enamelled and dull black finishes and in two models—one to fit any standard pattern bracket and the other for use where the lamp is attached through the number plate. They have been tested and approved by Scotland Yard for use on London taxicabs.

Altogether 275,222 people passed through the turnstiles during the nine days the show was open, thereby setting a record. Attendance on one day is estimated to have reached 50,000. One of the most impressed visitors to the show was J. D. Mooney, vice-president of the General Motors Corporation.

L. Albert & Son Expands

L. Albert & Son, Inc., of Trenton, N. J., dealers in used rubber mill machinery, have announced the opening of their new warehouse at 56 Penn street, Quincy, Mass., to serve the New England territory. The warehouse is on the N. Y., N. H. & H. R. R., with a private siding, and is equipped with overhead traveling crane which permits of handling heavy machinery. They expect to carry a complete line of machinery for all branches of the rubber trade at the new location, with the same policies in practice as have been maintained in their Trenton and Akron warehouses.

New Australian Tire Plant

The Rapson Tire Company of Sydney, Australia, will begin manufacturing operations early in 1928, according to reports to the Department of Commerce. The plant will have an initial capacity of 3,500 tires per week.

Fairfield Plant Being Enlarged

This plant of E. I. duPont de Nemours & Co., at Fairfield, Conn., where all their rubber coated fabrics are manufactured, is now undergoing enlargement to take care of increased production

CABOT DEVISES CARBON BLACK CONTROL TEST

By Use of Test in Carbon Black Plant, Company Says, All Material Which Would Give Unsatisfactory Results Can Be Culled Out.

ANOTHER step in the elimination of the causes of variation in finished rubber goods is indicated by the announcement of Godfrey L. Cabot, Inc., carbon black manufacturers, of Boston, that they have discovered in their laboratories a simple empirical test which will indicate, without an actual trial in rubber, changes in the reinforcing properties of carbon black as it is produced in the factory. Variation in the finished product has long been the greatest problem of the rubber compounder and the Cabot company state that their new control test for carbon black has already aroused much interest among chemists to whom the particulars have been made known.

By means of actual tests in rubber the Cabot chemists examined hundreds of samples of carbon blacks from different plants and found variations which are probably due to changes in weather conditions but which are not being overcome under the present processes of manufacture. These many tests suggested to them a direct test to be made on carbon black to show in advance the results which its use in rubber would give. This test can be applied as often as necessary in the plant where the black is being made to cull out all of the black which will give a low tensile, low modulus and poor abrasive resistance to rubber.

An actual rubber test was found to be entirely too slow for a practical control of the uniformity of carbon black quality because variations were sudden and temporary. By means of the new test applied in the carbon black plant, however, it is possible to cull out the unsatisfactory black for ultimate sale to other industries. By this step the chemist is regarded as having eliminated one more variable for the rubber compounder.

GENERAL RUBBER DEALERS HOLD MEETING IN ATLANTA

The General Tire and Rubber Company has established branch headquarters at Atlanta, to take care of the company's sales interests in the South. The announcement was made at the opening of a conference of General distributors by William O'Neil, president of the company, who made the trip to Atlanta to address the meeting. Mr. O'Neil stressed the fact that the sales activities in the Atlanta district should show a marked increase during the coming year in keeping with the increased industrial activity in that part of the country.

The conference was one of a series of regional meetings which have been arranged to coordinate the sales efforts of the company and their distributor organizations.

TIRE PLANTS OPERATE ON REDUCED SCHEDULE

Current Production is Estimated to Be Only 75 Per Cent of Capacity—Spring Dating Now in Force in Three Out of Four of the Zones.

TIRE production has slowed down materially in the Akron district and work has been let go in rather large numbers. October operations in most of the large plants were below September but perhaps equal to October of last year. Current production is estimated to be from 70 to 75 per cent of capacity.

Dealers are credited with having bought recently on a hand to mouth basis but the stock survey of the Department of Commerce indicated that they were entering the autumn season rather well stocked which probably has something to do with the slowness of recent orders. There has also been a waiting attitude on account of spring dating.

Virtually the same spring dating plan as was used last year will be followed by the manufacturers again. As will be remembered, the first solicitation of spring dating business begins at different times according to a zoning system which has been worked out. The country is divided into four zones. Dating business is already being booked in three of the zones and will begin in the fourth by the middle of November. In general, spring dating began slightly earlier this year than it did last year.

The Ford shutdown has affected several of the Akron plants that have been getting a share of the Ford original equipment business. This business has been slower in resuming than had been expected. A report from Akron is to the effect that several large contracts for original equipment for other automobiles have recently been placed and will contribute to the steadiness of the production schedule.

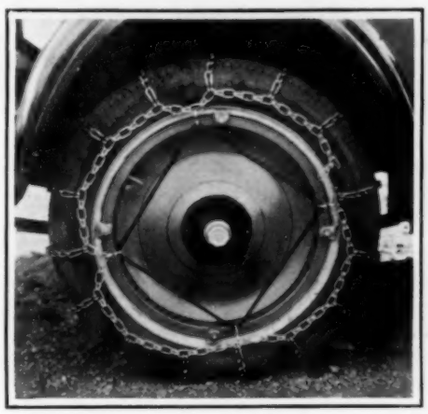
New Vanderbilt Prices

The R. T. Vanderbilt Co., New York, issued a new price list on November 1 covering its complete line of chemicals and compounding materials. The prices of three of the Vanderbilt materials have been reduced. Age-Rite resin anti-oxidant is now 65 cents per pound in ton lots, Langford Clay is quoted at $10 per ton in carload lots, and Pyrax A talc is now $7.50 per ton, also in carload lots. The prices of the other materials were not changed. Copies of the complete price list covering 19 materials are now being distributed.

Lee Rubber Earnings

The net income of the Lee Rubber and Tire Company for the ten months ended October 31, is estimated at $700,000 after all charges are deducted, or the equivalent of $2.33 per share on the 300,000 capital shares outstanding.

New Type Chain Adjuster



New Gates Adjuster Shown on Tire

The Gates Rubber Company have announced the production of a new type of chain adjuster which they will display for the first time at the Automobile Equipment Association Show at Chicago.

The chain adjusters are made of tough elastic rubber with four hooks for attaching to the side chains in the manner indicated in the above photograph. In drawing the chain taut, the disagreeable noise of the chain slapping on the fenders and pavement is eliminated.

ISSUES BRIEF SKETCHES OF TECHNICAL PERSONNEL

Binney & Smith Company, New York, manufacturers of carbon black, have recently sent a circular to the trade in which they give brief biographical sketches of their research, development and control personnel. Since the inauguration of their laboratories six years ago they have enlisted the aid of several technicians experienced in modern research and development of carbon black for use in rubber manufacturing.

On the research end are the following chemists: William B. Wiegand, chief of research, who is internationally known as a chemist and physicist, with many years' experience as a rubber factory executive; Carl W. Sweitzer, an experienced colloid chemist, who is studying fundamentals from the physico-chemical viewpoint; Louis J. Venuto, Samuel C. Dixon and John W. Snyder, who devote their time to pure research and industrial application of carbon blacks.

In charge of the service and control divisions is Donald F. Cranor, who has had 15 years' experience on rubber compounding and vulcanization and who has contributed freely to the literature of rubber technology, and Harold A. Braendle, who is in charge of the rubber laboratory where his training in compounding and technical plant control is of valuable assistance. Mr. Braendle's assistant is Henry C. Steffen, a trained machinist in charge of physical testing.

The circular is attractively gotten up and gives an excellent idea of their organization.

TIRE PRICES DOWN 5% IN SENSATIONAL CUT

Firestone Makes Reduction in First Grade Tires—Is Followed by Leading Manufacturers — May Affect Last Quarter Earnings.

FOLLOWING the sensational cut of 5 per cent in tire prices made by the Firestone Tire & Rubber Company, on November 1, the other leading tire manufacturers have announced a similar reduction in their respective price schedules. The companies affected are United States Rubber, Goodyear, Goodrich, Kelly-Springfield, Ajax, Fisk, Miller and others.

The reduction first announced by the Firestone Company affected both high pressure and balloon casings of their Firestone or first grade lines and was described as an "adjustment." This cut was in addition to the 5 per cent additional dealers' discount which the company made a few weeks ago. Truck tires and tubes and secondary or third lines of tires and tubes are not affected by the reduction, either in the case of the Firestone Company or the other manufacturers.

The reduction came as a surprise to the manufacturers and the tire trade following, as it does, so closely upon the recent additional dealers' discount of 5 per cent which was also granted by all the manufacturers following the initial action of the Firestone Company.

The present action of the Firestone Company in making the latest reduction was viewed by the other manufacturers as a move to stimulate tire business for the next few months. The fact that the announcement was made on November 1, the beginning of the fiscal year of the Firestone Company, was significant. For the companies whose fiscal year has not closed, the move toward lower prices at this time, may cut into earnings for the last quarter, according to the opinions expressed by some of the trade.

J. M. Huber, Inc., Moves

J. M. Huber, Inc., have moved to new quarters at 460 West 34th street, New York City, where in conjunction with their general offices they have installed a research, service and testing laboratory fully equipped with rubber compounding machinery and testing devices where research problems can be handled under practically factory conditions. Research laboratories are also maintained at the Huber plant at Swartz, La.

Distributes Wall Plaque

The Cleveland Liner & Manufacturing Company, Cleveland, Ohio, manufacturers of Blue Processed liners and "Linerette," the separator paper, recently sent out to the industry an attractive pulveroid plaque suitable for hanging in shop or office. Over 500 have already been distributed and it is planned to issue new ones from time to time.

AUTO PRODUCTION SHOWS BIG DECLINE

Manufacture of Motor Vehicles Drops 624,190 Units in First Nine Months of Current Year — September Production Low—Canadian Output Drops.

THE production of motor vehicles has fallen off to an almost startling extent during the first nine months of the current year. From the statistics of the Department of Commerce there would appear to have been 624,190 less cars of all kinds, including trucks, manufactured in the United States this year than were produced during the corresponding nine months of 1926.

The total figure covering production of motor vehicles for the nine months of the current year started at 2,851,736 units, as against 3,475,926 in 1926. The chief contributing factors in this decline have been the shut-down in the Ford output and the recent decline in Dodge production. There have also been a number of temporary suspensions in production by various companies pending changes in models and equipment. On the other hand, within the last few months some of the automobile companies, notably the General Motors units, have made new high production records.

September Output Drops

The decline in automotive production is particularly marked in the figures for the month of September. The total number of both passenger cars and trucks manufactured during September, 1927, was 257,577, as against 393,357 in same months of 1926. The September figure of this year, however, is tentative, and based only on the number of vehicles manufactured by the members of the National Automobile Chamber of Commerce. However, in view of the practically total suspension of production by the Ford Motor Company, this tentative figure will probably be very close to the final number.

The drop in production can be seen both in the number of passenger cars and trucks. The total number of passenger cars produced in the month was 225,013, as against 350,923 during September, 1926. Truck production during September of this year was 32,564, as against 42,434 during the corresponding month in 1926.

A similar decline is noted in the production of automotive vehicles in Canada over the same period. During September of the current year, a total of 11,262 units were manufactured in Canada, as against 17,495 during September, 1926. The decline in the total for the entire year, however, in Canadian production is not as noticeable as in the case of domestic manufacture. For the nine months of 1927, 161,583 units were produced in Canada, as against 172,842 during the corresponding nine months' period in 1926. In view of the fact that both Ford and Dodge companies have large plants in Canada, the decline in Canada can be attributed to the same causes as in the case of production in the United States. Production in both countries is expected to jump as soon as the Ford Motor Company comes out with its new model.

PROGRESS IS REPORTED ON LIBERIA PLANTATION

Plans to modernize the jungles of Liberia with electricity through the construction of a central power station on the Du River plantation project was announced recently by the Firestone Company. Diesel engines are to be used to drive the generators which will furnish electric power for pumping machinery, refrigerating plant and electric lights.

It is also planned to establish direct communication with the Akron home office by the erection of a powerful radio station. J. C. Harrower is already en route to Monrovia to direct the construction of the wireless station.

According to the latest statement from company officials, the progress in the Liberia development is highly satisfactory. A total of 15,000 acres are reported to have been already cleared and planted. New roads have been constructed and buildings erected on both the Du River plantation and the Cavalla River project.

Warner-Quinlan Earnings

The financial statement of The Warner-Quinlan Company for the last quarter and for the nine months of the current year shows earning to date equal to $2.35 per share on the 240,380 common shares outstanding after deducting estimated depreciation, depletion and Federal income taxes and allowing for preferred dividends. Net income for the quarter, after deducting interest charges, but inclusive of depreciation, depletion and Federal income taxes, was $361,298, and for the nine months ended September 30 totaled $911,848.

The company continues to enjoy an excellent business in their line of mineral rubbers and other products, and report very satisfactory sales, as would be indicated by the above financial statement.

More Employment Reported

Employment throughout the rubber goods manufacturing industry in the United States during the month of September showed a gain of 6.7 per cent over the same period of a "strictly average year," according to the report of the Department of Labor. For the purposes of comparison, the Department of Labor has fixed 1923 as such an "average" year. The report also shows that wages paid in the rubber tire manufacturing industry are 9.7 per cent greater than in 1923.

In the boot and shoe and the mechanical rubber goods line, employment was lower than in 1923 by 10.6 per cent, but at the same time the wages paid were 2.3 per cent greater, showing a higher individual wage.

P. I. TAPPING TESTS SHOW GOOD RESULTS

Yield on Small Areas in Typhoon Zone Regarded as Encouraging to Philippine Planters—Detailed Results to Be Released in Near Future.

MATURE rubber trees in the northern part of the Philippine Islands on which tapping experiments have been made by the Philippine Bureau of Agriculture during the last year, have shown encouraging yields, according to a preliminary report secured in Manila by a representative of THE RUBBER AGE.

The bureau has been carrying on its experiments in two different districts in the northern part of the Archipelago. Both of the areas are in the typhoon belt, one in the northern part of the Island of Mindoro and the other in Bataan, province of Luzon. Trees were planted about 15 years ago.

The area in Bataan province comprises a little over one acre. It is situated about 50 miles from Manila, in an elevation of about 700 feet above sea level. There were 82 trees tapped for 13 months. The girth of these trees varied from 13 to 43 inches at a point three feet above the ground. The average girth was 26 inches.

Tapping System Used

The tapping system used was one cue on one-half circumference, alternate monthly. There were 179 tapping days, 21 rainy days and 9 days on which no tapping was done. due to lack of material. The total yield in 179 tapping days amounted to 308.96 pounds of dry rubber. The rubber content was 37.84 per cent.

The results from this meagre data are regarded as very encouraging. Considering the fact that the trees were stunted and were tapped by inexperienced tappers and the area was situated in a district subject to storms, Philippine planters can expect to get yields comparable to those on the plantation areas of the Middle East.

The area in Northern Mindoro comprises about 15 acres. Nearly 1,000 trees have been tapped and approximately the same yields obtained as in Bataan. The experimental station is under the direction of a trained agriculturist and many different systems of tapping are being tried out. The detailed annual report on results will be published shortly.

In the neighborhood surrounding these two areas considerable interest is being developed among the natives and quite a few small rubber groves have been started.

CATALPO!

NATIONAL STANDARD CO. PURCHASES OAKES & CO.

The National Standard Company, of Chicago, by recent act of its board of directors, has increased its capital stock for the purpose of purchasing the assets and business of Oakes & Company, Indianapolis, and the carrier division of the Electric Refrigeration Corporation, of Detroit.

The Oakes Company has been known as a subsidiary of the Martin-Parry Company and manufactures carriers for spare tires, tire locks and radiator fans. By the merger of these companies, it is reported that they will have a virtual monopoly on the ring type of tire carrier, through their combined patent rights. The Oakes Company also is a leading supplier to many of the automobile manufacturers of radiator fans.

The purchase of these two companies will be financed partly from the earned surplus of the National Standard Company and partly from the sale of the new stock which will be presented to stockholders on a 40 per cent of holdings basis.

The National Standard Company, manufacturers of wire braids, wire tapes and steel cables used by tire companies, is said to supply more than 90 per cent of the rubber companies in the United States and Canada.

FOOTE BROS. ACQUIRE PLAMONDON MFG. CO.

With the purchase of the A. Plamondon Manufacturing Company by the Foote Brothers Gear and Machine Company, both of Chicago, which was recently announced, a merger is affected of two of the nationally known pioneer industrial firms specializing in the manufacture of gearing and power transmission equipment.

The A. Plamondon Company was the older of the two firms, having been organized in 1859. An interesting side light on the merger is found in the fact that in the early '80's, when John B. Foote began to think of going into the machinery business for himself, A. Plamondon was the man to whom he turned for advice and financial assistance. The advice and a substantial loan was freely given and helped to cement the long friendship of the founders of the two companies, which are now combined under one head.

Still Waiting on the Ford

The outlook for increased factory and sales activity in the automotive industry continues to hinge largely upon the appearance of the new Ford car, according to a survey made public by *Automotive Industries* on November 3. Sales in practically all parts of the country showed a diminishing total during October, that journal states, and the November prospects are uncertain pending action by Ford. The large decrease in automobile manufacturing and sales has been in the light car field, but sales of better priced cars has likewise been curtailed.

District Managers of Dayton Company Meet

Left to right: Paul D. Lain, C. F. Faro, C. F. Buttrick, J. S. Brady, H. B. Smith, J. S. Nall. Middle row: Lynn Harvey, director of sales; A. L. Freedlander, factory manager; W. K. Gough, manager of Main One; J. A. MacMillan, president and general manager. Back row: H. L. Boger, R. L. Wetzel, assistant advertising manager; Ben Hubert and W. G. Goodwin, factory chemist

The district managers and executives of the Dayton Rubber Manufacturing Company recently convened in a three-day conference at which the 1928 sales and advertising plans of the company were outlined and discussed.

J. A. MacMillan, president and general manager, told of the large increase in 1927 over any preceding year and what the company is doing to handle the anticipated 1928 business. Lynn Harvey, director of sales, told of certain selling and merchandise policies to be followed during the coming year, while E. B. Self, sales promotion and advertising manager, outlined the 1928 advertising plan.

The sessions closed with a special trip through the factory where the visiting representatives were shown the new features of tire construction as well as the improved machinery installed.

Exports of Sundries Drop

Exports of rubber sundries and specialties showed a drop in value from $427,836 in August to $398,903 in September, or a decline of 7 per cent, according to the latest figures of the Department of Commerce. The only outstanding item which showed an increase was rubber balloons, which advanced 12 per cent, but which at the same time showed a decline in unit value of 14 cents. With the exception of bathing caps, rubber bands and erasers, all unit values dropped slightly as compared with August.

Lancaster Doubles Capacity

The Lancaster Tire & Rubber Company, Lancaster, Ohio, shut down for a few days during the last week in October in order to make changes in equipment and routing of work. Operations were resumed early in November with a new and more improved system of production.

One of the important changes is the installation of an overhead track conveyor system operated by electricity. The new improvements are expected to double the capacity of the plant.

J. J. Peugnet

J. J. Peugnet, formerly a member of the staff of the Rubber Association of America, died at his home in North Stamford, Conn., on October 24. While with the Association, Mr. Peugnet was chiefly concerned with rubber import matters and became widely known among those concerned with the crude rubber trade in the port of New York.

U. S. RUBBER INCOME DROPS 30 PER CENT

The United States Rubber Company earned about $5,100,000 after taxes and charges in the ten months ended October 31, comparing with $7,300,000 in the same period last year, a decrease of 30.1 per cent. Allowing for ten months' dividend requirements on the 651,100 shares of 8 per cent preferred stock, net income in the period was equal to 93 cents a share earned on 810,000 outstanding shares of common stock, against $3.65 a share in the same period of last year.

Gross sales in the ten months amounted to about $177,000,000, a decrease of about $19,000,000, or 10 per cent under last year, while sales of tires alone totaled about $40,500,000, a decrease of $18,000,000, or more than 30 per cent.

Dickinson Cord Tire

The Hydro-United Tire Corporation of Pottstown, Pa., has recently put on the market the Dickinson cord tire which is built on the Dickinson automatic tire building machine. This equipment has been known in the tire industry for several years, it having undergone a long period of development. The machine first forms a strip of rubber-impregnated cords, each cord having a rubber core and being in turn composed of rubber-impregnated threads. The strip is wider at its center where it helps form the tread portion of the carcass than it is when the beads are approached. Exceptional strength and service is claimed for the new tire.

PERSONAL ITEMS
—*about Well-known Rubber Men*

C. E. Bishop, consulting engineer on reclaimed rubber, has moved his office from the United Building to the East Akron Postoffice Building, Akron, Ohio.

Maxwell W. Schoen, for the last five years superintendent of the Akron branch of the New Haven Sheradizing Company, resigned on November 1. Mr. Schoen, who resides at 264 West Market street, Akron, has not announced his future plans, but it is understood that he will remain in Akron.

Clyde E. Lowe, president of the Clyde E. Lowe Company, 2976 East 81st street, Clevelnad, Ohio, manufacturers of curved mandrels, calendar shells and mandrel polishing machines, states that the use of circular mandrels is increasing steadily in the manufacture of inner tubes. "Replacement business is a big factor at the present time," said Mr. Lowe, "showing that the circular inner tube has taken its place as a permanent fixture in the industry."

H. W. Huber, general manager of H. M. Huber, Inc., manufacturers of carbon blacks, is returning to the United States on S.S. Rotterdam, which sailed from Holland on November 1. Mr. Huber went abroad in August and during his stay has toured Great Britain, France, Belgium, Italy and Holland.

J. A. Talbot, vice-president and sales manager of Bloomingdale Rubber Company, manufacturers of reclaimed rubber, has resigned, effective December 1. Mr. Talbot has no immediate plans for the future.

E. F. Humphrey, manager of dealer advertising of the Miller Rubber Company, is in charge of the advertising course to be given in the night session of the Akron University.

P. W. Litchfield, president of the Goodyear Tire and Rubber Company, spoke at the luncheon of the Cleveland Chamber of Commerce on October 25. The luncheon was in observance of "Management Week." Mr. Litchfield's topic was "Management's Function in Industry."

Daniel H. Fenton, who has been with the Fisk Rubber Company since 1919, has been appointed vice-president of the company. Mr. Fenton has devoted a great deal of his time to the foreign business of the company and has just returned from a business trip abroad. It is understood that he will continue to handle the expansion of the overseas business.

Everett Thorpe, of New York, has been elected vice-president and a director of the Pennsylvania Rubber Company.

H. E. Porter, general manager of the National Tire Dealers' Association, spoke before the meeting of the Akron Tire Dealers' Association, and announced that headquarters for the national association will be located in the United Building, Akron, in order that the association will be in closer touch with the manufacturers and dealers in the rubber and tire center of the United States.

Ward T. Van Orman, the pilot of the Goodyear blimp, amused the luncheon party of the Kent, Ohio, Rotary Club, at which he was a recent guest, by recounting the various thrilling incidents of his life as a balloonist. Mr. Van Orman is the winner of one international balloon race and five national contests.

H. O. Nadler, formerly with the Barrett Company, of New York, is now director of advertsing and sales promotion of The Casein Company of America, at New York.

J. N. Dunlevy, formerly advertising manager of the India Tire and Rubber Company, has been transferred to direct sales in the Akron district.

Charles H. Lindsly is now connected with the United States Rubber Company as chemist in the development department of the Morgan & Wright plant, Detroit.

A. C. Fisher, manager of the accessory and repair materials department of the India Tire and Rubber Company, Akron, has recently taken over the duties of advertising manager in addition to his former position.

J. L. Barrett, special representative for the Goodyear Tire and Rubber Company in Columbia and Venezuela, has just returned after a year and a half in those countries, and in view of his excellent work in South America he has been promoted to be manager of the Goodyear branch in the Philippine Islands.

C. T. Morledge, of the India Tire and Rubber Company, Akron, has been appointed manager of tire sales of that organization.

E. E. Dearth has been appointed chief chemist for the Fisk Rubber Company at its Chicopee Falls, Mass., plant, succeeding Clifford W. Sanderson, resigned.

William C. Ehrenfeld, formerly president and general manager of the Dural Rubber Company, Flemington, N. J., has severed his connections with that company. He has made no announcement as to his future plans.

A. J. Dornself, manager of the St. Louis office of the Murray Rubber Company, of Trenton, N. J., has been promoted to division manager for the Western division and will maintain headquarters at both St. Louis and Chicago.

Hon. Simeon D. Fess, U. S. Senator from Ohio, spoke at the opening Employee's Night of the 1927-28 season at the Goodyear Theatre, Akron, October 19. He took for his subject "Government and the People."

L. T. Henaman has been appointed district sales manager for the Goodrich Rubber Company in California and will particularly concentrate his efforts on truck tires and commercial accounts. His offices will be with the Richard A. Bixby Company, the Goodrich distributors at Long Beach, Cal.

F. E. Stephan has been appointed branch manager of the B. F. Goodrich Tire & Rubber Company at Toledo. Mr. Stephan has been with the Goodrich organization for 16 years and for the last seven years has been the branch manager for the company at Huntington, W. Va.

CATALPO!

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

Financial Items

Rubber and Motors

STATISTICAL POSITION OF RUBBER IMPROVES

Exchange Market Shows Higher Range of Prices Over List—Fair Demand Coming From Factories, But Chief Buying is in Future Positions.

THE trading in crude rubber on the New York Rubber Exchange has shown a distinct firmness during the last fortnight but with a decidedly bullish tone which has pulled the general range of price levels up to an average advance of one and one-half cents. The market has been particularly encouraged by the reduction in stocks in both London and America and the lower imports of crude rubber during October, which will be more in keeping with the rate of local consumption. The evidences of a more energetic enforcement of the restriction policy is also contributing to the belief that the high peak in stock accumulations has been reached and the uncomfortable high statistical position which rubber has held during the last two months is now changing to more normal levels.

Trading on October position at the close of business on October 18, was at 34.30. This figure went to 34.00 as a low, but has since recovered to the high point of 35.80 on November 4. All the other positions responded accordingly.

There is reported to have been a good factory demand during the last few weeks as well as a considerable business in future speculations as evidenced by the sales in distant future positions. At the present those who have bought in the futures are in an advantageous position.

Stocks in London have declined since last reported to 69,551 tons from a high of 70,916 as last reported and net imports into the United States during October will not exceed 29,000 tons.

Seiberling Doubles Income

Net earnings of the Seiberling Rubber Company for the first nine months of the current year are reported to be $1,161,000, as compared with $451,833 for the same period last year. These figures represent net income after all charges have been deducted and show an increase of over 100 per cent from the nine month period of 1926.

Increases Capitalization

The Howe-Bauman Rubber Company, of New Haven, Conn., has increased its capitalization by the creation of 2,000 shares of common stock of no par value to take the place of 1,000 shares, previously authorized and outstanding and by the issue of 1,500 shares of 8 per cent cumulative preferred stock with a par value of $100.

Late Stock Prices

	Last Price Nov. 4	Oct. 18	—1927— High	Low
Ajax	7⅝	8	13	7½
Firestone	150	156	167	117
do 6% pfd.	106	107	107⅞	107
do 7% pfd.	106	107½	107½	98½
Fisk	15½	15½	20	14⅞
do 1st pfd.	92½	95	100	81
General	170	160	180	140
do pfd.	110	102½	110½	99¼
Goodrich	71	79	84⅛	42¾
do pfd.	105½	105	109¾	95
Goodyear Com.	52	60½	64	50⅝
do pr pfd.	92	95½	118⅛	104½
do pfd.	118	119	121	98½
Hood	39	39⅛	47	39⅜
India	17½	17	30	17
Intercontinental	11¾	12⅜	15¾	11⅜
Kelly Springfield	28⅝	26¾	30¾	9½
do 1st pfd.	89	87¼	96	44
do 8% pfd.	93	92½	98	35
Lee	14¾	12⅞	14⅞	7
Miller	23⅞	25½	36¾	25½
do pfd.	98¾	99	104	99
Mohawk	17½	20	25	15
do pfd.	50	60	65	65
Seiberling	32	35	38⅛	21⅜
do pfd.	101	101	103	96
Star	2	1½	2	1½
U. S. Rubber	47¾	51½	67⅛	37¼
do pfd.	93½	100⅝	111⅜	85¾
U. S. Rubber Reclaiming	....	....	12	12
do pr pfd.	....	....	24	24
do series A	....	....	15	15

New Exchange Members

The following have been added to the list of members of the Rubber Exchange of New York, Inc.: R. M. Prior, of Hecht, Levis & Kalm, Ltd., London and Edward J. Wade, of Wade Brothers & Co., New York City.

The secretary of the Rubber Exchange of New York announced on October 25 that George Flach, of the Raw Products Company, New York City, had been admitted to membership on the Exchange. At the same time it was announced that The Products Corporation, Ltd., of London, had been granted corporation privileges under the rules of the Exchange.

Goodyear Votes Dividend

The directors of the Goodyear Tire & Rubber Company have voted an initial dividend of $1.75 on the first preferred stock payable on January 1, to stockholders of record on December 1. The regular quarterly dividend of $1.75 on the preferred stock was voted favorably at the same meeting.

RUBBER COMPANY SHARES LOWER ON EXCHANGE

There is little to be noted in the fluctuations on either the New York or Cleveland stock exchanges in rubber company shares. Aside from the new low in Firestone 6% pfd. of barely a half point, no new extremes, either high or low have been reached. There has been a decided drop, however, in U. S. Rubber, Fisk, Goodrich and Goodyear since last reported, but these new reductions are far from the extreme lows of the year and simply reflect the general bearish tone of the markets over the last few days. The activity in trading has been generally light and no large holdings have been let loose on the market at any one period.

An easier tone prevails at the present time and may carry rubber shares down a trifle, particularly in view of possible decreased earnings during the final quarter of the year as a result of the sudden reduction of 5 per cent in tire price schedules for all companies. On the other hand, most of the companise reported comfortable net profits for the past quarter and a general improvement over the nine months of the preceding year. A dominant factor in stock market prognostications as affecting particularly the rubber companies will be the future results attendant on the introduction of the new Ford car.

General Motor Earnings

The financial statement of General Motors Corporation for the third quarter of the current year shows net earings of $64,508,094, or the equivalent of $3.57 per share on the 17,400,000 shares outstanding. For the first nine months of this year the total net income is put at $193,758,302 as compared with $157,731,833 for the corresponding period of last year. On the basis of nine months earnings, each share has earned $10.75 to date for the current year. The high earnings for the last quarter establish a new quarterly record.

Closing Prices on Rubber Exchange of New York, Inc.

OCTOBER 19 TO NOVEMBER 4, 1927

Date	Spot	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Sales*
Oct. 19	34.00	34.00	34.30	34.40	34.60	34.80	35.00	35.20	35.40	35.70	35.80	36.00		488
20	34.00	34.00	34.20	34.40	34.50	34.70	35.90	35.00	35.30	35.40	35.60	35.80		468
21	34.10	34.10	34.50	34.70	34.80	34.90	35.00	35.10	35.30	35.60	35.80	36.00		681
22	34.10	34.10	34.40	34.60	34.70	34.80	34.90	35.00	35.20	35.50	36.70	35.90		365
24	34.30	34.20	34.50	34.60	34.80	35.00	35.20	35.40	35.50	35.60	36.00	36.20		412
25	34.50	34.60	35.00	35.00	35.30	35.50	35.70	35.80	35.90	36.10	36.30	36.50		515
26	34.80	34.60	34.80	34.80	35.10	35.40	35.60	35.70	35.80	35.90	36.10	36.30		703
27	34.80	34.60	34.90	35.00	35.20	35.40	35.60	35.80	35.90	36.00	36.20	36.40		289
28	35.10	34.90	35.10	35.40	35.60	35.80	35.90	36.10	36.20	36.40	36.50	36.70		1076
29	35.30	35.10	35.30	35.60	35.70	36.00	36.20	36.30	36.40	36.60	36.80	37.00		120
31	35.00	34.70	34.90	35.10	35.30	35.50	35.80	36.00	36.10	36.30	36.50	36.70		389
Nov. 1	34.90	34.70	34.80	35.10	35.20	35.50	35.70	35.80	35.90	36.10	36.30	36.50	36.70	290
2	35.10	34.80	35.20	35.30	35.50	35.80	36.00	36.20	36.40	36.70	36.80	37.00	37.20	309
3	35.20	35.20	35.40	35.60	35.80	36.10	36.30	36.50	36.20	36.80	36.90	37.10	38.30	399
4	35.90	35.80	36.30	36.30	36.50	36.70	36.90	37.00	37.20	37.40	37.50	37.70	37.90	1236

(*) In lots of 2½ tons each

FIRESTONE HAS BRANCH MANAGERS IN CONFERENCE

A conference of branch managers of the Firestone Tire and Rubber Company was held in Akron during the last two weeks of October. The men came to Akron in two groups, each remaining for a week, during which the sales plans and policies for the coming year were announced and discussed. The conferences were addressed by Mr. Firestone and the other leading officials of the company and a series of new films were shown on the subject of the care of tires and importance of service. Group meetings were held by division managers and every phase of the company's sales policy was thoroughly discussed. Their entertainment while at the plant included a luncheon, at which Mr. and Mrs. Firestone were hosts, at Harbel Manor. A trip through the plant on the last day of the conference completed the program.

Auto Accessory Exports

At the request of a committee representing the Motor & Accessory Manufacturers' Association and the Overseas Automobile Club, the Department of Commerce has undertaken the work of subdividing the classifications on exports of automobile accessories into more specific divisions, which will list separately the chief exported accessory items which have large markets abroad.

Beginning January 1, 1928, separate figures will be available month by month on the exports of tire service equipment, including vulcanizers, tire and rim tools and service machinery, automobile bumpers, shock absorbers, spark plugs for replacements, pumps for gas or oil, brake and clutch linings for replacements and automobile paint spray equipment.

Scotch Rubber Industry Hit

The rubber factories in South Scotland are still suffering from the general industrial depression in Great Britain, according to recent advices. The expected improvement after the settlement of the recent labor troubles has not materialized and in some instances conditions are reported to be worse than in 1926.

Auto Exports Continue High

In spite of the decrease in automobile production over the last few months the high ratio of export shipments to the total production output still maintains. During September 26,273 units, including both passenger cars and trucks, went to foreign markets. They represented a total value of $29,129,619, which was an increase of nearly $1,000,000 over the exports in September, 1926. However, even this high figure was less than the average monthly total for automotive exports during the current year to date, which has been $35,202,834. The decline from this average monthly figure was accounted for entirely by the decreased shipments in low price cars, particularly the Fords.

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Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
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OAKS, PA.
(Montgomery County)

D. M. MASON RESIGNS FROM PENNSYLVANIA CO.

The sudden resignation of Dudley M. Mason, founder of the Mason Tire and Rubber Company, as general manager of the Pennsylvania Rubber Company, Jeannette, Pa., was announced recently. Ray A. Likley, assistant auditor of the Pennsylvania Company, also resigned at the same time.

Mr. Mason has been general manager of the company since early this year, when he succeeded George W. Daum. No reason is given for this sudden resignation, and no statement has been issued either by Mr. Mason or the Pennsylvania Company. Under Mr Mason's management the Pennsylvania Company had been turning out 2,500 to 3,000 tires per day. He had relinquished control of the Mason Tire and Rubber Company three years ago.

Mr. Likley, who is known to the rubber industry as an expert cost accountant in connection with rubber manufacturing costs, came to the Pennsylvania Company at the time when Mason took charge.

Promoted by Goodyear

W. C. Wright, former manager of the labor training division of the Goodyear Tire & Rubber Co., Akron, has been appointed assistant to William S. Stephens, general superintendent. W. E. Thomas, former chief instructor at the Goodyear university, succeeds to the office held by Mr. Wright.

IT PAYS TO MICRONIZE

RESISTANCE

ELECTRIC cables of braided fabric were formerly used in mines, mills and factories under more severe conditions than they were made to withstand. Poor service inevitably resulted. Now rubber covered cable has proven best for this purpose. It is unaffected by scraping, dragging and straining or the destructive action of water, oil or acids.

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which renders the cable tough and resistant to the greatest possible degree. Our service department will be glad to work with electrical cable manufacturers who wish to incorporate into their products the greatest possible resistance to wear.

Samples and quotations upon request

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DE LASKI & THROPP TAKE APPEAL TO SUPREME COURT

The recent decision of the United States Circuit Court of Appeals setting aside the verdict secured by the DeLaski & Thropp Circular Woven Tire Company against the Murray Rubber Company, will be carried to the United States Supreme Court for review. As previously reported in THE RUBBER AGE, the DeLaski & Thropp Company sued the Murray Company, alleging infringement of a tire making machine and won a verdict through the lower courts. The Murray Company, however, won on appeal to the Circuit Court of Appeals.

In commenting on the last ruling, DeLaski & Thropp Company issued the following statement in explanation of their appeal to the Supreme Court:

"It should be noted that the Court of Appeals made no finding against us on any proposition of anticipation or non-infringement of the stitcher angle changing feature which is characteristic of the said claims. Both these questions were found in our favor by the District Court and the said findings were not disturbed by the Court of Appeals.

"The whole opinion of the Court of Appeals is based upon the proposition that, inasmuch as the Supreme Court of the United States decided some years ago in our favor the suit brought against us under the State patent, and held the State patent invalid, this Court of Appeals is obliged to hold the said claims of our patent invalid even though, as the Court says, the machine manufacturer of tires may have arrived perhaps, in its highest state in the device of our said patent. We have never regarded the decision of the Supreme Court as having that scope or meaning, and we have instructed our counsel to apply to that Court for a review of this decision of the Third Circuit Court of Appeals. No court has held against us on the proposition that our stitcher angle changing mechanism was new and effective, but in the prior case involving the State patent, on the contrary, it was expressly found that the mechanism as well as the method was old. We regard this as a sharp distinction between the two cases and feel justified in looking forward to a favorable outcome."

Archer-Strauss Enlarge

The Archer-Strauss Rubber Company at Framingham, Mass., will enlarge their present factory building by an addition 227 by 100 feet, according to recent announcement. The plans call for a building of second-class construction, one and two stories in height and erection will begin at once.

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ARGOSITE CLAY

ULTRA FINE
REMARKABLY ADHESIVE
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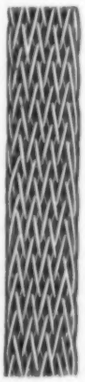

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National Standard Company
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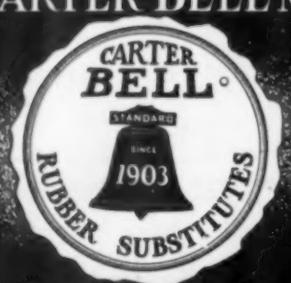

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SALES DIVISION — Domestic Sales and Exporters of Reclaimed Rubber.

E. Akron P. O. Bldg. Akron, Ohio

DAME RUMOR LINKS U. S. RUBBER & DU PONT FIRMS

Interest was recently aroused in financial circles by the rumor that DuPont interests had secured large holdings of United States Rubber Company common stock. No confirmation has been forthcoming but interest has continued in the absence of any statement one way or the other. The persistent report in Wall street circles was to the effect that the DuPont interests had acquired as high as 200,000 shares.

Dame Rumor has been unusually active in linking the name of the United States Rubber Company with financial gossip, however, and it was only a brief time ago when it was reported that B. F. Goodrich and the United States Rubber would join forces, and even later that Goodyear and U. S. would merge, all of which stories have, so far, failed to occur.

Firestone Man Goes to Egypt

M. E. Wagner has been appointed the new Firestone representative in Egypt, Syria, Mesopotamia and Persia, and has sailed to take up his duties at his new post. Mr. Wagner has been in the export department of the Firestone Company at Akron for some time, and in his new position will develop contacts between the local distributors in that region and the factory.

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2 W. & P. Mixers, 2 Vacuum Shelf Dryers. State condition, price and where can be inspected. Box No. 467, THE RUBBER AGE.

(*Continued in next column*)

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3 W. & P. Heavy Duty Mixers, one 50-gallon W. & P. Masticator, 12 Vacuum Shelf Dryers, 1 No. 27 Banbury Mixer.
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WE OFFER FOR PROMPT SALE, one (1) 24x66" Stock and Friction Three-Roll Calender, complete with drive, Cutler-Hammer Control, D. C. motor with all refinements, and one (1) 16x30" washer, both used less than six weeks and guaranteed as good as new. The machines are now erected and may be inspected at our shop.

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MANUFACTURERS seeking competent help—TECHNICAL MEN seeking good positions—DEALERS having good used machinery—will find the CLASSIFIED SECTION of THE RUBBER AGE of advantage in reaching all their prospects in the rubber industry in the shortest possible time. TRY IT!

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Cameron Slitters; Royle Tubers; Refiners; Calenders; Presses; Vulcanizers; Mills—60, 54, 48, 42 and 36", all makes, with or without motor drives.

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Washed and dry, ready for compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding.
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CONTINENTAL RUBBER CO., OF NEW YORK
1775 BROADWAY NEW YORK CITY

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NOVEMBER 4, 1927

COTTON

COTTON prices advanced a little over the last two weeks but did not vary with any sharp fluctuations. The tendency at present is downward with the probability that the next government report will show a higher total estimated yield than last reported. The changes in price levels have been so slight that they have not greatly affected fabricated goods. Mills are reported to be working to good capacities. The average price on spot middlings during October was around 20.75 cents.

High, low and closing prices on November 3, were as follows:

	High	Low	Nov. 3 Close	Oct. 18 Close
November	20.65	20.65	20.65	20.50
December	21.02	20.65	20.73	20.55
January	21.08	20.70	20.76	20.59
March	21.23	20.87	20.93	20.75

Tire Fabrics

A fair demand has prevailed for tire fabrics with sales for nearby and next year deliveries holding up in spite of curtailments in tire production. A seasonal decline in demand for immediate deliveries was looked for and discounted by the trade. The more settled cotton market is expected to improve the market somewhat. Late prices follow:

CORD			
Peeler, carded, 23/5/3	lb.	.45½ @	.46½
Peeler, carded, 23/4/3	lb.	.47½ @	.48½
Peeler, carded, 13/3/3	lb.	.42 @	.43
Peeler, carded, 15/3/3	lb.	.43 @	.45
Egyptian, carded, 23/5/3	lb.	.55½ @	.57½
Egyptian, combed, 23/5/3	lb.	.61½ @	.64
CHAFERS			
Carded American, 8 oz.	lb.	.40 @	.41
Carded American, 10 oz.	lb.	.44½ @	.45
Carded American, 12 oz.	lb.	.41 @	.45
Carded American, 14 oz.	lb.	.41 @	.44
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.43 @	.45
Carded American, 10¾ oz.	lb.	.43 @	.45
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.46 @	.46½
Carded American, 17¾ oz. 10-5 ply	lb.	.41 @	.42

Sheetings

The market for sheetings has not been very active due largely to the unsettled cotton market which prevailed during the last part of October, but is now improving. Southern mills are reported to have a satisfactory number of orders booked for the remainder of the year and first of next. With this good business in prospect, prices have been fairly firm. Latest quotations follow:

40-inch 2.50-yard	yd.	.14 @	.14¼
40-inch 2.85-yard	yd.	.12⅞ @	.12⅞
40-inch 3.15-yard	yd.	.13 @	.13¼
40-inch 3.60-yard	yd.	.11 @	.11¼
40-inch 3.75-yard	yd.	.09¼ @	.09½
40-inch 4.25-yard	yd.	.09 @	.09⅛

Ducks

Occasional sales have been reported in fair volume especially in enameling ducks and filling ducks. Prices have been steadier than heretofore but a slight decline in keeping with the easier cotton market will be noted. Mechanical ducks on contract deliveries for the next six months were also active. Latest prices are as follows:

Belting and Hose	lb.	.35½ @	.36
Enameling	lb.	.36 @	.40
Shoe Ducks	lb.	.31 @	.36
Single filling	lb.	.15½ @	.18½
Double filling	lb.	.19 @	.20

RECLAIMED RUBBER

The market continued unchanged with a strengthening tone in evidence, due to the slight upward movement and firmness which has characterized the crude rubber market. Factories engaged in reclaiming are working at satisfactory capacities and continue as heavy buyers in the scrap market. Reclaimers generally are looking for a record year. Prices on the chief grades remain as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.17½ @	.18
Super-Reclaim No. 2 Black	lb.	.14 @	.14½
High Tensile Red	lb.	.14 @	.14½
Shoe			
Unwashed	lb.	.08 @	.08¼
Washed	lb.	.10¼ @	.10¾
Tube			
No. 1 (Floating)	lb.	.17 @	.17½
No. 2 (Compounded)	lb.	.13½ @	.14
Tires			
Black, washed		.10 @	.10¼
Black, unwashed		.08 @	.08½
Black selected tires	lb.	.08¾ @	.09
Dark Gray	lb.	.11¾ @	.12
Light Gray	lb.	.13 @	.13¼
White	lb.	.15 @	.15½
Truck, Heavy Gravity	lb.	.07½ @	.07¾
Truck, Light Gravity	lb.	.08 @	.08¼
Miscellaneous			
Mechanical Blends	lb.	.07 @	.08
Red	lb.	.07 @	.14½

Scrap Rubber

The scrap rubber market has remained practically unchanged since last reported. There is a firmer tone in price levels with accumulations of scrap more scarce and dealers not free with their offerings. The demand from reclaimers, however, remains good with the factories reported busy. Latest quotations on the chief grades follow:

(Prices to Consumer)

Auto tire peelings	ton	34.00	@36.00
Standard White auto	ton	57.50	@60.00
Mixed auto	ton	22.50	@25.00
Bicycle tires	ton	24.00	@25.00
Clean solid truck tires	ton	25.00	@27.00
Boots and shoes	lb.	1.70	@ 1.75
Arctics, trimmed	lb.	.01⅜	@ .01½
Arctics, untrimmed	lb.	.01	@ .01¼
Inner tubes, No. 1	lb.	.07⅝	@ .07¾
Inner tubes, No. 2, compounded		.05½	@ .05⅝
Inner tubes, Red	lb.	.06¾	@ .07¼
Air Brake Hose	ton	37.00	@38.00
Rubber Hose	ton	17.00	@18.00

CRUDE RUBBER

THE crude rubber market has shown a slight improvement over the last two weeks, with price levels showing a steadiness and a good factory demand stimulating trading. The reduction in stocks in both London and New York and reduced shipments from the East, coupled with the evident intent of the British to put teeth into the restriction scheme, has produced a feeling that the market is again on the upward turn. The daily fluctuations have been slight but the gain has been nevertheless pronounced. On October 18, smoked sheets were bid at 34½ cents and at the close of the market on November 4, dealers were holding for 36⅛ cents with buyers at 35⅞. The prices quoted in the outside New York market on November 4, were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot		.35⅞ @	.36⅛
November		.35⅞ @	.36⅛
November/December		.30 @	.36¼
January/March		.36½ @	.37
First Latex, crepe spot		.36 @	.36¼
Amber Crepe, No. 2 spot		.31¾ @	.32
Amber Crepe, No. 3		.30½ @	.31
Amber Crepe, No. 4		.30 @	.30¼
Brown Crepe, Rolled		.29¼ @	.29½
Brown Crepe, Clean, thin		.32¾ @	.33
Brown Crepe, Specky		.32 @	.32¼
Liquid Latex, per gal.		1.50 @	1.75
Pontianac—			
Bangermassin		Nominal	
Palembang		Nominal	
Prime Pressed		Nominal	
Sarawak		Nominal	
Paras—			
Up-river Fine		.29 @	.29½
Up-river Medium		.24 @	.26
Up-river Coarse		.21½ @	.22
Acre Bolivian, fine		.28½ @	.29
Tapajos, fine		.39 @	—
Cut Beni Bolivian, fine		.45 @	—
Caucho Ball—			
Upper, shipment		.22½ @	.22¾
Island, fine		.26½ @	.27
Centrals—			
Corinta, scrap		.27 @	—
Esmeralda, sausage		.22 @	.23
Guayule, washed and dried		— @	.28
Africans—			
Benguela, No. 2		Nominal	
Congo, upper, black		Nominal	
Congo, upper, red		Nominal	
Balata—			
Block, Colombia		.35½ @	.38
Block, Cuidad		.34½ @	.40
Gutta Percha—			
Siak		.24 @	—
Red Macassar		3.00 @	—

LONDON MARKET

Standard Ribbed Smoked Sheets—*Buyers*			
Spot		.17⅛ @	.17¼d
November		.17⅛ @	.17¼d
December		.17⅜ @	.17½d
January/March		.17⅝ @	.17⅝d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—*Sellers*			
Spot		.17¼ @	.17⅜d

Recent daily closing prices on the Rubber Exchange of New York are shown on the Financial Page in the News Section of this issue. Daily spot prices of Ribbed Smoked Sheets are given in the Statistical Section.

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Tubing Machines

THE WILLIAMS FOUNDRY & MACHINE CO.
"In Business Since 1888"
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THE
KUHLKE MACHINE CO.
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Automobile Tire Molds and Cores
GENERAL MACHINE WORK
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Importers of

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Members Rubber Exchange of New York, Inc.
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Bunny Baby Pants	Pure Rubber Sheets
Sanitary Aprons	Rubber Bibs
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Sanitary Bloomers	Bathing Caps
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SHEET GUM cut to pattern for manufacturers
Special Goods To Order
Made by
RAND RUBBER CO., INC.
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THE I. B. KLEINERT RUBBER CO.
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RUBBER FACTICE OF HIGHEST QUALITY THE STAMFORD FACTICE STAMFORD CONN THE STAMFORD RUBBER SUPPLY CO

Smoothness of the surface of a rubber product is noticeable where Factice is used

The STAMFORD RUBBER SUPPLY COMPANY
STAMFORD, CONN.

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NOVEMBER 7, 1927

THE spotty condition prevalent in the manufacturing end of the tire industry is reflected in a slightly lessened activity in rubber chemicals and compounding materials. Though this condition is not general the decreased production schedules of several of the larger Akron tire plants has made chemical producers cautious lest a general slowing up of tire plants take place. However, the continued demands from those factories which have not had to decrease production is taken as a sign that the present condition is only temporary with a full tire production schedule in sight by the middle of December. Mechanicals, drug sundry and footwear plants are very active and are in the market for their usual requirements in good volume. Prices of compounding materials are firm with no easiness shown. Quotations are practically unchanged since last issue.

ACCELERATORS

Organic			
A-1	lb.	.70 @	.80
A-11	lb.	.75 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.75 @	.90
A-20	lb.	.60 @	.75
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums	lb.	.17 @	.17½
Cryiene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolyiguanidine	lb.	.85 @	.90
Diphenylguanidine	lb.	.68 @	.72
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.35 @	.40
Formaldehyde Aniline	lb.	.38 @	.42
Grasselerator 102	lb.	.65 @	.70
Grasselerator 552	lb.	4.45 @	4.60
Grasselerator 808	lb.	1.05 @	1.35
Grasselerator 833	lb.	1.50 @	1.75
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.62½@	.67½
Lithex	lb.	.18 @	.20
Methylenedianilide	lb.	.38 @	.40
Monex	lb.	3.25 @	—
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
Quinoidine	lb.	.40 @	—
R & H 40	lb.	.50 @	.55
R & H 50	lb.	.50 @	.55
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.55 @	.60
Tensilac, No. 41	lb.	.65 @	.70
Thermic F	lb.	.50 @	.55
Thiocarbanilide, kegs	lb.	.26 @	.28½
Thionex	lb.	3.25 @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenylguanidine	lb.	.65 @	.70
Vulcanex	lb.	.82 @	.86
Vulcone	lb.	.70 @	.74
Vulcanol	lb.	1.05 @	1.08
Z 88	lb.	.75 @	1.00
Inorganic			
Lead, sublimed blue	lb.	.08¼@	.08¾
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.08¾@	—
Magnesia, calcined, light	lb.	.06 @	.12
heavy	lb.	.04 @	.04½

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.08 @	.35
Browns			
Sienna, Italian	lb.	.05 @	.12½
Umber, Turkey	lb.	.04½@	.06
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.35 @	.38
Reds			
Antimony crimson, 15/17	lb.	.40 @	—
sulphur free	lb.	.50 @	.52
golden 15/17 F.S.	lb.	.16 @	.25
Indian English (dom.)	lb.	.08 @	.10
Oximony	lb.	.13¼@	—
Para toner	lb.	.13 @	.14
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.85 @	1.95
Whites			
Lithophone, Akrolith	lb.	.05 5/8@	.06
Lithophone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.10 @	.10½
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.17 @	.20
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01½@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.13½@	.14
Are-O-Sol	ton	8.00 @	11.00
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.02¼@	.04
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.09 @	.13
Bone Black	lb.	.05½@	.11
Carbon, compressed	lb.	.07½@	.11½
Carbon, uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04 @	—
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.19 @	.25
common bone	lb.	.14 @	.15
Magnesia, carbonate	lb.	.07½@	.10
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	16.00 @	18.00
Velvetex	lb.	.04 @	.07
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Vansulite	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.10 @	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	41.00 @	43.00
Pioneer—granulated	ton	51.00 @	53.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	34.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½@	—
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
Double pressed	lb.	.11½@	.12
triple pressed	lb.	.13½@	.14
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½@	1.45
Oils			
Castor, No. 3 bbls.	lb.	.12 @	.13
Corn, crude, bbls.	lb.	.09¾@	.10
refined	lb.	.11 @	—
Cottonseed, crude		.08 @	—
Cycline	gal.	.27 @	.34
Dispersol A (light)	lb.	.15 @	.16
Dispersol B (dark)	lb.	.14 @	.15
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.10½@	.11½
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Peanut, domestic, crude	lb.	.11 @	—
Petrolatum, white	lb.	.08⅞@	.09
amber	lb.	.03¾@	.04
dark amber	lb.	.03⅝@	.03½
Pine, steam distilled	lb.	.67 @	.69
Rapeseed, refined	gal.	.82 @	.83
Rosin, first rectified	gal.	.55 @	—
second rectified	gal.	.58 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine	bbl.	9.00 @	10.00
Rosin, grade K	bbl.	9.35 @	—
Pigmentar	gal.	.33 @	.41
Tar Retort	bbl.	16.50 @	17.00
Solvents			
Acetone, pure	lb.	.14½@	—
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride		.06¾@	.07½
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, V. M. & P.	gal.	.14 @	—
Turpentine, spirits	gal.	.54 @	.55
wood	gal.	.42 @	—
Waxes			
Beeswax	lb.	.58 @	.60
Carnauba	lb.	.40 @	.50
Ceresin, white	lb.	.13 @	.14
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.30 @	—
green	lb.	.26 @	.30
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Antox	lb.	.79 @	.83
Neozone	lb.	.74 @	—
Stabilite	lb.	.65 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½@	.06
Sulphur flour,			
Superfine bags	cwt.	2.20 @	2.80
Superfine, bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

RUBBER imports fell off during October to approximately 29,500 tons which will probably be well in line with the final October figure for consumption. During the last fortnight the market position of crude rubber has improved slightly and it would appear that the peak of stocks has been reached. For the last two weeks London stocks have shown a decline of substantial amounts which have brought the total down to 69,551 tons.

Rubber shipments invoiced to the United States from Far Eastern ports and Europe have also been less over the last 3 weeks.

All of these factors are reflected in the firmness which has characterized the crude rubber markets in both New York and London and the general price levels show a slight gain since last reported.

The activity in crude rubber trading on the New York Rubber Exchange has increased with the betterment in the price levels and the steady gain in the daily spot closing price of ribbed smoked sheets can be noted in the table on the following page.

The sixth year of restriction began on November 1, and while only a few days of the first quarter have run, the average price on the London market has been 17 pence, a slight improvement over 16.620 which was the average price prevailing during the last quarter.

The most significant points affecting the statistical position of crude rubber have been the decrease in invoiced shipments to the United States and the decline in London stocks.

Latest statistics covering rubber exports from the principal producing countries and the net imports into the principal manufacturing countries have been added to the following tables.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,281,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,333	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,833,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,853	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.	33,301	23,852,857	33.73	3,500	3,036,929		29,801

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219
August	23,649	29,361	20.359	28,982	35,909	34,533	33,460
September	16,705	24,410	17,594	31,497	31,691	32,904	27,214
October	16,814	26,881	21,321	31,520	29,047	29,836	
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,263	94,301	99,216
Apr./June	65,463	127,860	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,893
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
August 13	3,955	825	1,646	112	6,538
August 20	3,981	582	1,007	678	6,248
August 27	4,121	760	2,009	167	7,057
September 3	4,443	734	1,058	150	6,385
September 10	3,415	889	1,085	65	5,454
September 17	3,832	576	1,243	162	5,813
September 24	4,497	839	1,391	181	6,908
October 1	3,911	904	1,628	556	6,999
October 8	4,629	754	1,621	115	7,119
October 15	4,573	861	1,170	1,596	8,200
October 22	4,514	690	1,833	922	7,959
October 29	2,903	858	1,208	810	5,779

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
January	—	39⅝	39⅝	—	39	39	39¼	38⅝	38⅝	38⅝	—	37⅞	36½	36⅝	35	35⅞	35⅝	—	34⅞	35	35½	36¾	36¾	—	35⅞	35⅞	35⅝	35⅞	—	35	35⅝	36¾
February	—	38⅞	34⅝	34½	34½	35⅝	—	—	35⅜	34⅝	35¼	—	35⅜	36⅜	—	35⅞	35⅝	—	36⅜	36⅜	36⅜	—	—	—	37⅞	37⅞	37⅞	37⅞	—	—	—	36
March	—	38⅜	38⅜	38⅜	38⅞	39⅜	39¾	—	39⅜	40⅜	40¾	39⅝	40⅜	40⅜	—	40⅞	40½	41	41¾	41⅝	41⅝	42½	42⅝	43⅜	43⅞	43⅜	43⅜	43⅞	43½	—	42¾	41
April	41¼	41⅜	41¼	41⅜	42⅜	42⅜	42⅜	43⅜	43⅜	—	—	39⅝	40⅜	40⅜	40⅜	—	—	44⅜	44	44½	44⅜	43⅜	43⅜	43⅜	44⅜	44⅜	44⅜	44⅜	45⅜	45⅜	44⅛	43⅝
May	45	45⅜	—	47¼	46⅞	45⅞	50⅜	52⅜	55⅞	74	89	87	74⅜	60⅜	60⅜	64⅜	72⅜	69⅜	68	61⅜	60⅜	76⅜	—	63	65	—	63¼	65⅝	69½	—	—	58½
June	69½	72	74⅜	76⅜	76⅜	73⅞	74⅜	74⅜	74	75¼	76⅜	74⅜	—	71⅜	71⅜	72⅜	73⅜	73⅜	76⅜	79⅛	83⅜	85⅜	82⅜	87	89⅜	85⅜	85⅜	85⅜	82⅜	—	—	77⅛
July	81⅜	81⅜	85⅜	—	—	88⅜	90½	95⅜	94⅜	71⅝	90⅞	106⅛	76½	105⅜	110⅜	117	116⅜	118⅝	—	121	117⅛	119	117⅜	112⅛	112⅛	82½	85⅛	96⅜	93⅜	89⅜	93⅜	103⅜
August	94⅞	96⅛	88⅜	85⅜	86⅜	—	97½	—	79	72½	86⅞	92	81½	80⅜	77⅜	—	78⅜	80½	94¾	83½	92	93⅜	93½	90	89	89	85⅛	85¼	87¾	91½	90	88
September	87¼	85	81¼	81¼	94⅞	97	99	—	80½	83	86⅞	—	92½	98⅜	98⅜	99⅜	98⅜	92⅜	99	101¼	102	99¼	99¾	99¾	98	98	89⅜	89⅜	91¾	91½	89⅜	89⅜
October	91¼	92	98⅜	98⅜	100	100¼	—	108	99¼	101	—	97⅛	95½	97	105½	104⅞	101¾	105½	109	107	107	109⅜	110¾	110½	109	106¼	108¼	107	99¼	100¼	98
November	99¼	98⅜	107⅜	107¾	108¾	—	108	109	109¾	106	106½	105⅞	—	101	99¼	90⅜	93	88¾	86⅜	—	88¼	90¾	88⅜	88⅜	—	—	—	93	91	91¼	107	104⅜
December	106⅜	108½	107⅜	107¾	108¾	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	98½
1926																																
January	—	—	—	87	—	87¼	88½	86½	87⅜	87⅜	88¼	88¼	88¼	88¼	86½	84½	—	82½	—	60⅛	—	72	—	68	—	66½	67	69¼	70½	69	—	79½
February	—	67½	66¾	66¾	68	—	—	—	67	65	66	66	65½	—	—	63	60	60	59	60	61¾	56	56	55	52	51¾	51	—	—	—	58	62¾
March	55	58	59	59	53½	57¼	56¼	56	56	61	60	60	63	62	62	61½	60¾	62	61	61½	61¾	61	60	60	59⅞	59	59	59	59½	58	59
April	48½	50	—	50	49¼	49¾	49¾	49¾	58	58	58	58	50½	48½	48⅜	47	47	47	48	49	48	48	48	48	48	48	48	48	49	48½	51¼
May	47½	49	50¼	49¾	49¾	49¼	49¼	49¼	49	49	49	49	49¼	49¼	47½	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜
June	42	42	42	42	41½	41½	41½	41½	42	43	43	43	41¾	47½	47½	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜	47⅜
July	41½	42	41½	42	41½	41½	41½	41½	41½	41½	43	41½	48½	42	42	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
August	38¾	42	41½	42	41½	41½	41½	41½	41½	43	41½	41½	41½	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
September	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
October	43	43	43¼	43¼	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾	42¾
November	41¼	41¼	41¼	41¼	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½
December	36¾	37½	37½	37½	—	87	87¼	87¼	87	87	87	87	87	87	87	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼	87¼
1927																																
January	—	—	38½	39	39¼	40¾	40¾	40¾	—	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	37¾	37⅝	37½	37¾	37¾	37¾	37¾	—	37⅜	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾
March	39¾	39¾	40	40¾	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
April	41¼	41¼	—	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
May	—	40½	40¾	40½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
June	40¾	40¼	40¾	40¾	41	41	41	41	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	35½	—	—	39¾	39½	39½	39½	39½	39½	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾
August	35¼	35¼	35¼	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾	34¾
Sept.	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Oct.	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
Nov.	35	35	35½	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾
Dec.																																

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50		
Dec.	27.42	26.60	37.88	98.51	38.25		
Average for Year	17.50	29.45	26.20	72.46	48.50		

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—First Quarter

Day	Nov.	Dec.	Jan.	Day	Nov.	Dec.	Jan.
1	16⅞	—	—	17	—	—	—
2	16⅞	—	—	18	—	—	—
3	17	—	—	19	—	—	—
4	17¼	—	—	20	—	—	—
5	—	—	—	21	—	—	—
6	—	—	—	22	—	—	—
7	—	—	—	23	—	—	—
8	—	—	—	24	—	—	—
9	—	—	—	25	—	—	—
10	—	—	—	26	—	—	—
11	—	—	—	27	—	—	—
12	—	—	—	28	—	—	—
13	—	—	—	29	—	—	—
14	—	—	—	30	—	—	—
15	—	—	—	31	—	—	—
16	—	—	—				

(The average price for the period for which daily prices are reported above is approximately 17.00 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
November-January	14.285	14.175	17.9983	46.709	19.265
February-April	16.858	12.917	19.356	28.103	19.696
May-July	14.242	10.947	38.469	21.001	18.165
August-October	14.944	14.632	43.269	20.199	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Oct. Cents	Nov. Cents	Day of Month	Oct. Cents	Nov. Cents	Day of Month	Oct. Cents	Nov. Cents
1	21.80	20.75	11	20.90	——	21	20.00	——
2	——	21.30	12	——	——	22	20.00	——
3	21.60	21.15	13	21.25	——	23	——	——
4	21.40	21.20	14	21.55	——	24	19.90	——
5	21.00	——	15	20.55	——	25	20.80	——
6	21.30	——	16	——	——	26	21.40	——
7	21.25	——	17	21.25	——	27	21.15	——
8	20.75	——	18	21.25	——	28	20.50	——
9	——	——	19	20.85	——	29	20.70	——
10	20.85	——	20	20.05	——	30	——	——
						31	20.60	——

Average Monthly Price Per Pound

Month	1925 Cents	1926 Cents	1927 Cents	Month	1925 Cents	1926 Cents	1927 Cents
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	20.04
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	21.95
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	20.55
Apr.	24.54	19.13	14.75	Nov.	20.94	12.86	
May	23.41	18.92	16.07	Dec.	20.06	12.68	
June	24.13	18.57	16.85	Average			
July	24.68	18.71	18.00	for Year	23.45	17.53	

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
March	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
April	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360	94,563	46,846	40,303	44,181	98,910	104,663	138,744
June	50,997	60,460	89,250	51,202	40,907	47,233	102,199	101,367	136,483
July	46,245	64,900	98,469	46,003	38,062	40,587	92,248	102,962	139,056
Aug.	42,354	60,870	96,148	41,254	37,360	40,937	83,608	98,230	137,085
Sept.	36,367	62,078	97,829	55,151	42,464	37,966	91,518	105,542	135,793
Oct.	34,085	64,989		51,098	52,930		85,183	117,919	
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,005
March	18,969	63,913	66,670	63,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	——
March	59,945	61,516	61,300	63,167	——
April	62,634	63,861	65,033	65,511	67,034
May	68,187	68,041	66,668	67,054	——
June	67,105	67,454	66,894	64,486	——
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	——
September	65,162	66,148	66,664	67,253	——
October	68,519	70,167	70,916	70,060	69,551
November					

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	16,726	25,440	July	15,894	23,101	22,558
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	25,764
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	25,178
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	
May	15,804	16,967	25,133	Nov.	19,788	25,486	
June	15,884	19,416	21,898	Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	26,001,664	66.8
1924	21,863,311	19.7	1926	24,199,524	78.8
1927			1927		
January	1,489,078	77.0	July	1,679,587	84.4
February	1,753,224	84.4	August	1,825,905	80.2
March	2,071,989	85.1	September	1,727,122	77.7
April	2,060,868	88.0	October		
May	2,169,208	86.9	November		
June	1,871,538	77.0	December		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	22,464,000
April	14,583,000	19,013,000	20,848,000	23,371,000
May	15,889,000	20,459,000	24,213,000	26,579,000
June	16,421,000	20,724,000	23,803,000	27,799,000
July	18,610,000	22,879,000	24,752,000	29,784,000
August	19,825,000	22,323,000	26,912,000	29,779,000
September	16,871,000	20,177,000	22,929,000	28,409,000
October	18,029,000	19,826,000	23,973,000	
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023	6,151	5,954	5,211	5,657	8,611	12,343	12,462
June	5,418	5,422	6,202	6,737	5,724	6,253	7,243	11,968	12,462
July	5,587	4,950	5,087	6,298	6,337	5,973	6,421	10,592	11,326
Aug.	5,607	5,872	5,752	4,760	6,744	6,393	7,261	9,732	10,721
Sept.	5,007	5,706		4,569	6,040		7,681	9,318	
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,373	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149	6,737	8,040	6,304	6,140	12,501	21,141	18,389
June	6,942	6,171	6,306	9,032	6,898	6,832	10,409	20,243	17,858
July	7,544	5,729	5,284	9,140	8,569	7,070	8,635	17,267	16,004
Aug.	7,618	7,424	6,480	6,923	9,579	7,983	9,271	15,462	14,664
Sept.	7,254	7,590		6,665	7,762		9,950	15,312	
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of Amreica figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,453	40,629
1927						
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	373,961	353,071	20,890	48,216	44,495	3,721
May	374,259	352,268	21,991	47,890	44,173	3,717
June	290,188	273,718	16,470	43,003	40,265	2,738
July	242,144	233,425	8,719	32,249	29,981	2,268
August	281,464	271,325	10,139	34,552	31,715	2,837
September						
October						
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[5]							
	Gross Exports	Gross Exports Minus Imports		Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley[4]	All Other[5]	World Total[7]
		Imports													
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,449	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	25,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,184	6,705	10,541	941	2,885	981	55,654
Feb.	27,528	11,607	15,921	3,571	1,469	552	445	360	4,707	6,526	10,634	675	2,082	1,098	48,040
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,003	12,490	733	3,203	1,791	65,093
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,530	10,035	557	2,374	1,495	46,663
May	31,393	15,491	15,902	3,124	760	786	415	348	5,436	5,528	14,099	586	2,431	1,207	50,616
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,519	9,402	772	1,030	1,706	47,400
July	23,947	12,697	11,250	4,018	827	859	500*	333	4,771	6,140	11,663	519	1,713	1,500*	*44,093
Aug.	30,371	17,105	13,266	5,357	688	1,133	500*	546	4,355	6,683	12,054	716	2,004	1,500*	*48,802
Sept.	29,835	12,095	17,740	4,911		645	500*	498				497	2,474		
Oct.															
Nov.															
Dec.															

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	–3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	–11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	–807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	44,375
March	40,316	8,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	3,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,347
September	35,675	8,843	1,774	2,029	1,355	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	–18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	181	316	139	100	64,371
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	153	336	146	210	47,781
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,026
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,761	2,896	2,006	3,380	2,519	1,084	918	887	694	633	–57	335	155	223	49,434
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	575	–16	243	164	183	46,609
July	35,720	1,116	2,384	2,946	2,104	1,505	1,007	415	900	436	66	227	177	236	49,239
August	31,001	3,463	2,795	3,119	2,013		1,274	386	650	604	–63	312	138	123	
September	28,704	7,800		2,891	1,850			518							
October															
November															
December															

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926 and averaged about 400 tons monthly during the first six months of 1927.

BOOK REVIEWS

LATEX, SEIN VORKOMMEN, SEINE GEWINNUNG, EIGENSCHAFTEN, SOWIE TECHNISCHE VERWENDUNG. By Dr. Ernst A. Hauser. With an appendix of patents on latex processes as compiled by Dr. Carl Boehm von Boernegg. Published by Theodor Steinkopf, Dresden and Leipzig. 1927. 232 pages, paper covered. Illustrated. 17.50 marks.

Those who believe in the greater utility of rubber latex, a school which is rapidly gaining members as more processes for the use and handling of latex make their appearance, will receive with pleasure this volume of Dr. Hauser's which brings together a complete summary of what has been done. Fragmentary reports of experiments with latex in various directions have been reported at various times and subsequently amplified with newer data. All of this material in condensed form but nevertheless completely summarized has been brought together in one volume. The author's own work in connection with latex is so well known that the reader approaches the work with confidence which the volume thoroughly justifies.

The first three chapters treat of latex bearing plants and tapping methods. The following 12 chapters constitute the technical section in which such subjects as latex concentration, vulcanization, coagulation, etc., are treated. A list of works on coagulants is given.

Dr. von Boernegg's review of patents occupies 42 pages and is a valuable addition to the work. In locating the scattered work that has been done on latex, this list will prove very helpful.

The volume is profusely illustrated, part of the illustrations bring drawn from work which Dr. Hauser has had published in the trade press.

SOME VULCANIZATION TESTS OF GUAYULE RUBBER. Technologic Paper No. 353 of the Bureau of Standards. By D. Spence, Research Associate, and C. E. Boone, Assistant Physicist. Eight-pages pamphlet. Sold by the Superintendent of Documents, Government Printing Office, at five cents per copy.

This pamphlet gives the results of some physical tests of guayule rubber grown in both Mexico and California. Figures are given showing the properties of different types of guayule rubber and several compounds made with standard plantation crepes.

Reports are given covering tests made using "pure gum," zinc oxide and gas black formulas where one-half the plantation crepe was replaced by guayule. Some data are given on aging tests based on eight months' exposure to the weather but protected from sunlight.

The authors conclude that properly prepared guayule rubber will compare favorably with plantation Hevea rubber. Numerous tables are given to show the results of the tests. Special attention is given to the tendency of guayule to deteriorate after the shrub is pulled.

RHYTHMIC CORRUGATIONS IN HIGHWAYS, by H. V. Carpenter and H. J. Dana. Published by the State College of Washington, February, 1927. 32 pages.

This bulletin presents some interesting studies of ryhthmic corrugations in gravel and crushed rock roadways, which admittedly "have never been fully explained" using an oscillographic recorder in the tonneau of a car. The tests show that the rear axle and body of the car while going over the corrugations or "washboards," frequently vibrates through vertical amplitudes many times greater than the depth of the corrugations. Various curves were taken during the experiments and are included as illustrations in the bulletin. Mathematical analysis based on the curves and the mechanics of the case explain many of the peculiar conditions determined as a result of these experiments.

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